Cat Point Creek

Watershed Management Plan

2004

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Stuart McKenzie, Northern Neck Planning District Commission: *Principal Author/GIS Mapping*

Hugh Markham, Tidewater RC&D: *Newsletter Editor/Public Contact Coordinator, Photographer*

Theresa Tabulenas, Northern Neck Soil and Water Conservation District: *Associate Author/Public Facilitator*

Joseph McCauley, United States Fish and Wildlife Service: *Phragmites Australis Locations*

Sandy Spencer, United States Fish and Wildlife Service: *Species List*

Joseph Weber, Department of Conservation and Recreation, *Virginia Conservation Lands Needs Assessment*

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Background and Intent of the Plan

In 1996, the Department of Conservation and Recreation (DCR) issued an assessment of watersheds in Virginia. The report ranked Cat Point Creek as a high priority watershed for non-point source (NPS) pollution potential and high natural heritage value.

In an effort to protect and improve the watershed, the Tidewater Resource Conservation and Development Council (RC&D) acquired an EPA 319 grant to initiate agricultural research, forest planning and educational programs. It also facilitated the formation of a citizens committee to oversee and direct conservation efforts specific to the watershed.

The Cat Point Creek Citizens Committee included a core group of watershed residents from Richmond and Westmoreland counties, local government representation, agency support and staff of the US Fish and Wildlife Service (USFWS) with newly acquired holdings adjacent to the creek. The property was named the Tayloe Unit of the Rappahannock River Valley National Wildlife Refuge which became a demonstration site for certain aspects of the initial watershed project.

Concurrent with initial conservation efforts, the citizens committee developed a preliminary watershed management plan and a Vision Statement that captured their intent for the watershed. It reads, "To establish a conservation perspective among residents and policy makers in order to maintain the intrinsic qualities of the watershed while recognizing and facing the inevitability of change."

The Citizens Committee remains active today. Conservation efforts funded by the EPA 319 grant included the introduction of Integrated Crop Management studies and ground water monitoring, the supply of timber bridges at logging sites, demonstration warm season grass plantings and workshops, buffer plantings, well water sampling and analysis in partnership with Virginia Tech., and a road clean up at two recreational sites accessing the creek. Consequent endeavors saw the establishment of a volunteer water monitoring group, invasive species management in cooperation with the USFWS and the Rappahannock Phragmites Action Committee, a creek debris clean up and the installation of a fish passage for shad and herring with assistance from the Nature Conservancy.

In 2003, the Citizens Committee was approached by local agencies to participate in the development of a comprehensive watershed management plan for Cat Point Creek as part of the effort to meet one of the C2K goals to develop plans for two-thirds of the Chesapeake Bay watershed by 2010. The effort would expand participation and scope of the group's initial outline and include partnership with the Northern Neck Planning District Commission (PDC), the Northern Neck Soil and Water Conservation District (SWCD) and the Tidewater RC&D. Funding was obtained from The Environmental Protection Agency's Chesapeake Bay Program through the Virginia Department of Conservation and Recreation.

Under this initiative, background articles and the announcement of public input meetings appeared in local newspapers to recruit participants. Four meetings were held in which

an overview and assessment of the watershed were reviewed. Maps were provided by the Northern Neck PDC. Discussion of issues, solutions, responsible parties, funding sources and timetable were captured in a watershed matrix (See Appendix C) and became the basis of the Cat Point Creek Watershed Management Plan.

Description of the Cat Point Creek Watershed

PHYSICAL SETTING

Cat Point Creek is situated in the Coastal Plain physiographic province in northeastern Virginia. The watershed has its headwaters in Westmoreland County, and continues into Richmond County where the water ultimately flows into the Rappahannock River. At the northernmost extent, the headwaters of Cat Point Creek is only eight-tenths (0.8) of a mile from the Potomac River, thus the watershed spans most of the width of the Northern Neck Peninsula at that point. The entire Town of Montross, the county seat of Westmoreland County, is located within the upper portion of the watershed, while only the northern portion of the Town of Warsaw drains to Cat Point Creek. (See Map #1: Location Map, Appendix A.) Cat Point Creek watershed is contained in Virginia Hydrologic Unit 23 of the Rappahannock River Basin, and is correctly referred to as part of Virginia Hydrologic Unit E23. (See Map #2: Hydrologic Units, Appendix A.)

Cat Point Creek Watershed covers approximately 75 square miles and has 9 major tributaries that feed the creek. The creek length is approximately 20 “river” miles long. The north-south extent of the watershed is approximately 12 miles, with the average width of the watershed being between 5 and 6 miles wide. The upper part of the watershed has steep slopes, and the creek valley is relatively narrow. Chandlers Mill Pond, west of the Town of Montross, is the largest pond that feeds Cat Point Creek. As you pass downstream, past the county boundary between Westmoreland and Richmond Counties, past County Bridge (Rt. 637), the river valley widens considerably, and the river becomes threaded through large riparian wetland areas. Steep slopes still occur on both sides of the wetland areas, and along the tributary streams that feed into the creek. Further downstream, at approximately the 9 mile creek marker (9 miles upstream from the mouth), the stream becomes a wide, tidal, estuarine stream, with extreme sinuosity, replete with cut-off oxbows.

POLITICAL BOUNDARIES

The upper (northern) portion of the watershed lies in Westmoreland County and includes the Town of Montross, and comprises approximately 32 square miles or 20,480 acres. The lower (southern) portion of the watershed lies in Richmond County, includes the part of Warsaw, and comprises 43 square miles or 27,520 acres of drainage area. The County Boundary is indiscernible when traveling on the creek, but it is of extreme importance when considering matters pertaining to land use controls. One of the goals for the management plan is to achieve more consistency in how each county addresses the watershed in their respective Comprehensive Plan.

TOPOGRAPHY

The topography of Cat Point Creek Watershed is analogous to the State of Virginia's topography in microcosm. The headwaters form in the steep mountains (in the highlands of Westmoreland County, approximately 250 feet above sea level). The stream flows swiftly with a relatively steep gradient until it reaches the Piedmont, where the gradient is less, and creek slows down (in the relatively flat wetland area in Richmond County). At the fall line (the last beaver dam on Cat Point Creek, between County Bridge and Newland's Road Bridge), the river becomes freshwater tidal, finally becoming brackish tidal near the mouth of the creek.

The creek flows through the uplands and descends to the neckland through the coastal scarp of the Northern Neck. Steep slopes occur throughout the watershed, but are more pronounced in the upper portion. (See Map #3, Topography, Appendix A.)

SOCIO-ECONOMIC SETTING

Census data is not available on a watershed basis. The median household income for Westmoreland County for 1999 is $35,797 and for Richmond County is $33,026. (The median household income for the State of Virginia as a whole is $46,677.)
In Westmoreland County the percentage of persons below the poverty line is 14.7%, while in Richmond County, that percentage rises to 15.4%. (The percentage of persons below the poverty line for the State of Virginia as a whole is 9.6%.) The median age in Westmoreland County is 42.8 years, with 19% of the population over 65 years of age. The median age in Richmond County is 40.3 years, with 17.7% of the population over 65 years of age. (The median age of the state of Virginia as a whole is 35.7 years, and 11.2% of Virginia's population is over 65 years of age.) One can glean from these statistics that the wages are approximately $10,000 lower than the State average, and that the population in the region is older than the average for the State.

POPULATION AND EMPLOYMENT

Cat Point Creek residents are typically employed in agriculture, silviculture, or in support industries, such as sawmills. Montross has Montross Hardwoods, Inc. which process logs into lumber, and Warsaw has Wood Preservers, Inc. which pressure treat wood to protect it from weathering. In the towns, professions such as realtors, lawyers, and land surveyors have their offices, as well as local, state and federal government agencies. Some residents commute to Dahlgren, Richmond and Fredericksburg for higher salaried positions.

In Westmoreland County, 68.6% of the workforce is employed in the private sector, 22.9% is employed in the government sector, and 8.5% are self-employed workers. In Richmond County, 69.5% of the workforce is employed in the private sector, while 21.6% is employed in the public, or government sector, and 8.7% are self-employed workers.

The population of Westmoreland County, according to the 2000 US Census, is 16,718 persons. The population of Richmond County is 8,809 persons. The United States Census Bureau does not gather data by watershed, however, through previous work in the watershed, 1500 property owners have been identified from county tax map records. A conservative estimate would be approximately 3000 persons living in the watershed. In Westmoreland County, there are 72.9 persons per square mile, while in Richmond County, there are 46.0 persons per square mile. With 32 square miles in Westmoreland County and 43 Square miles in Richmond County, population estimates are 2, 333 and 1,978 respectively. The population of persons residing in the Cat Point Creek Watershed is between 3,000 and 4,300 persons. While enumerating those exact number of residents was not undertaken at this time, it is something that would be useful in the future. Using Census 2000 block population data, and assuming uniform population distribution, it is possible to approximate the number of citizens. After determining the 2000 population, it will be a "benchmark" to compare the watershed in the future.

LAND USE

The land use in the watershed is predominantly forested, with agriculture following a close second in land use type. (See Map #4, Major Forested Areas, Appendix A.) The forests in the Cat Point Creek watershed contain mixed forest (deciduous and coniferous) as well as coniferous forests (softwoods, usually loblolly pine), and deciduous forests (hardwoods, mainly oak). Satellite imagery can be classified by spectral signature to classify land cover. (See Map #5, Land Cover) Land cover is different than land use, however it is an indicator of land use. For example, a junkyard may have shrubs and small trees growing among the cars, the land cover would show scrub/shrub, when the land use is a junkyard. That being said, the land cover map does show the marshes on the main stem of Cat Point Creek, and the urbanized areas around Montross and Warsaw.

While there are pockets of developed land, most notably in the towns of Montross and Warsaw, there are areas of rural residences, mainly along the roads. These residences are usually clustered near the highway, however, there are isolated farmhouses off the main road. At present, there are no large-scale subdivisions in the watershed. In addition to the residential development in the watershed, there are minor commercial areas, such as the Newland area in Richmond County.

Future land use is depicted in each county's respective Comprehensive Plan. The future land use maps for Richmond and Westmoreland Counties are quite different, and it is easy to see the county boundary when the two future land use maps are combined. (See Map #6, Future Land Use.) In general, both counties are concentrating development in and around their primary growth centers. For Westmoreland County the primary growth center is Montross, for Richmond County, the primary growth center is Warsaw. Both growth centers have public water and sewer that can accommodate increased development.

TRANSPORTATION

As is the case in most of the United States, the predominant mode of transportation is by automobile. State Route 3, the primary north-south artery in the Northern Neck peninsula, skirts the eastern edge of the middle and lower part of the watershed. Route 3 then crosses the northeast quadrant of the upper watershed, bisecting the town of Montross, and crossing Chandler's Mill Pond. Numerous rural roads cover the watershed, the majority are hard surfaced roads. There are five bridges that cross Cat Point Creek. From north to south, these include the Route 3 Bridge that crosses Chandler's Millpond, Peach Grove Bridge (Rt. 622), County Bridge (Rt. 637), the Newland Bridge (Rt. 624) and Naylor's bridge at the mouth of the creek and adjacent to the Rappahannock River. The Newland Bridge is slated by VDOT for replacement in the next few years, which has some citizens concerned (see the Issues and Concerns Section.)

Historically, Cat Point Creek was used to ferry agricultural goods downstream in small bateaus. Today, boat traffic is recreational in nature. Above County Bridge (Rt.637), the only practical means of transportation is non-powered vessel, either a canoe or kayak. Approximately halfway between County Bridge (Rt. 637) and the Newland Road Bridge (Rt. 624), the creek widens enough for the use of skiffs and small boats powered by outboard motors. Only small boats are navigable at this point, due to the shallow water and the low overhead clearance of the Newland Road Bridge (less than 3.5 feet at low tide). Below the Newland Road bridge, larger boats have access, but are still limited by shallow depths and numerous shoals that line the channel.

Land Resources

SOIL CHARACTERISTICS AND LIMITATIONS

At the headwaters of the creek in Westmoreland County, the Rumford-Kempsville-Emporia association of soils, characterized by well-drained, steep to nearly level, loamy and sandy soils on the high marine terrace. South of these soils, proximate to the Richmond-Westmoreland county boundary line are soils in the Suffolk-Rumford association, that are characterized by well drained and somewhat excessively drained, gently sloping to steep, loamy and sandy soils on the Coastal Plan upland. Proceeding downstream, Rumford-Kempsville-Suffolk association soils (somewhat excessively drained and well drained, steep to nearly level, sandy and loamy soils on the Coastal Plain upland) are located in the eastern part of the watershed. In the lower portion of the watershed, the Tetotum-Rumford-Suffolk association predominates, consisting of moderately well drained to somewhat excessively drained, nearly level to gently sloping, loamy and sandy soils on the low marine terrace. Finally, the soils in the lower floodplain of Cat Point Creek, below Rt. 637 (County Bridge), are of the Rappahannock-Pamunkey-Nansemond association. These soils are poor for development, being very poorly drained to moderately well drained, nearly level, mucky and loamy soils on the fluvial river terrace. In general, soils in the uplands are more conducive to development than are the soils in the lowlands with some exceptions.

The soils on the Northern Neck are very low in organic content, save for those fluvial soils near the rivers and along streambeds. The lack of organic matter in the soils results in high leaching potential of the soils, as there is no organic matter in the soil to slow the percolation of precipitation to the water table. (See Appendix A, Map #7, Nitrate Leaching Potential, and Map #8, Pesticide Leaching Potential). Most of the soils in the watershed have a high potential to leach into the shallow groundwater table. The Nitrate Leachability Map shows the entire watershed to have a very high to high potential for nitrate leachability. The only areas with moderate leachability are the streambeds which are not farmed. With regards to Pesticide Leachability, the situation is very similar, with more area in the "high" category, and the "low" category corresponding with the streambeds. With virtually all citizens in the watershed utilizing groundwater for their source of drinking water, the leachability potential of soils becomes an important issue.

LAND OWNERSHIP

The majority of the land in the watershed is privately owned, save for approximately 1,111 acres in the Tayloe Unit of the United States Fish and Wildlife Service's Rappahannock River Valley National Wildlife Refuge near the mouth of the creek. With most of the lands of the watershed in private hands, the future of the watershed is within the private landowners power to control.

Both Richmond and Westmoreland Counties have Land Use Value Taxation that gives a reduced tax rate to those lands that are used for agriculture or silviculture. The rate is contingent upon the land remaining in the present land use. If a person wants to develop land that was previously in land use value taxation, the county requires that the difference between the actual tax rate to the reduced tax rate to be paid to the county for the previous 5 years, in exchange for developing the property. This applies to only that acreage that will be taken out of production (not the entire parcel, unless the entire parcel is converted.) Land Use Value Taxation has, undoubtedly, contributed to preserving the pristine, natural land cover adjacent to the creek.

Two factors contribute to a reduction in development pressures in the Cat Point Creek Watershed. One is the lack of suitable waterfront property with access to navigable water. Another factor keeping Cat Point Creek relatively undeveloped is the abundance of hunt clubs in the watershed. Hunt clubs in the Northern Neck are prevalent, and are formed by local residents who want to increase their opportunity for bagging game. Most hunt clubs target deer, but turkey and waterfowl hunting is also popular. Hunt clubs negotiate with interested landowners to lease the owners land for hunting. Usually a yearly lease price for hunting privileges is negotiated, and each year the hunt club has a chance to renew the lease. The hunt clubs provide income to the landowner that can be used to offset the tax burden of the property. This allows the landowner to keep ownership of his land, save the timber on his land and pay his taxes all at the same time. Without the numerous hunt clubs it is believed that there would be more sales of land and harvesting of timber in the watershed. Hunt clubs are an important ingredient to the conservation of lands.

CRITICAL AREAS, STEEP SLOPES

Steep slopes are a major concern in the Cat Point Creek watershed. Almost every tributary of Cat Point Creek has steep slopes adjacent to it, as well as the main stem of Cat Point Creek above the tidally influenced section. (See Map #9, Slope, Appendix A.) With the low organic content soils found in the watershed, these steep slopes can slough off tremendous amounts of sediments if the vegetative cover is removed. Currently, the majority of these steep banks are in forested or shrub/scrub cover. Increased logging of the forests, especially the steep slopes could have detrimental results to the aquatic ecosystem of Cat Point Creek. In addition, inappropriate residential development in these steep slope areas could also impact the water quality in the watershed. The increased runoff caused by the impervious surface of the buildings roofs in proximity to steep slopes could cause erosion of the face of the slope during prolonged rain events.

One advantage of these steep slopes in the watershed it that they are so steep, they are not easily logged. The lack of human disturbance in these areas allow many diverse species of shrubs and trees to flourish that would not otherwise. Because of their slope, aspect and higher moisture levels, the steep slopes often tend to have a different array of plant species than found on the more level uplands, and thus tend to provide special habitats for amphibians, birds, invertebrates and other fauna. The steep slopes of Cat Point Creek are yet another feature that makes the watershed unique.

LANDFILLS

There are currently no operating landfills in the Northern Neck. However, there are some historic landfills no longer in service that have the potential for contaminating groundwater. From a previous grant, through the Department of Environmental Quality's Coastal Program's Non-Point Source Pollution Program, a map of the historic landfills in the Northern Neck area was created. (See Map #10, Historic Landfills, Appendix A.) The map shows one historic landfill that is in the watershed, known as the Baynesville Sanitary Landfill. There are two landfills to the east of the watershed, and given the general flow of groundwater from the west to east, these landfills are not likely to present a problem for the residents of Cat Point Creek.

LAND APPLICATION OF BIOSOLIDS

Due to the low organic content of the soils in the watershed, farmers seek to increase the organic content in different ways. Some plow under stubble from the previous years crop, others rely on land application of biosolids. Biosolids are attractive to farmers, because they are provided at no cost, and add organic content and nitrogen to the soil. Thus, the farmer does not have to expend his own funds purchasing inorganic fertilizer to ensure a profitable yield per acre. Less money spent on inputs means more return for the farmer. Land application of biosolids occurs more often in Westmoreland than Richmond County, however it occurs in both counties on a regular basis.

Improper land application of biosolids has the potential to pollute surface and/or groundwater. Applying biosolids before (or during) a rain event, applying to steeply sloped land, and improper pre-treatment of biosolids can all potentially contaminate surface water. Proper monitoring of land application is important to reduce the possibility of contamination of surface waters.

Water Resources

MAJOR TRIBUTARIES

Numerous tributaries contribute to the mainstem of Cat Point Creek. The headwaters of Cat Point Creek consist of two branches. One branch flows into The Big Swamp, the other flows into Chandlers Mill Pond. The tributaries to the Big Swamp are Mariner Run, Mitchell Run, and Finchs Branch. Tributaries to Chandler's Millpond include Kenna Swamp and Black Swamp on the western branch of the millpond, and Davis Branch, Poorhouse Swamp, and Nanny Sanford Swamp on the eastern branch of the pond. Water flows out of Chandlers Millpond, through Chandlers Mill Run, into The Big Swamp which then officially forms Cat Point Creek. Proceeding downstream, Ruin Branch flows into Cat Point Creek from the East, while Bailey and Synder Swamp join below the junction of Ruin Branch from the West. From the eastern side of Cat Point Creek, Crookhorn Branch flows into the creek, while Bowen Swamp delivers water from the west side of the watershed at that point. Next, Jones Branch flows from the East, while Grandmammy Swamp accommodates water flowing from the West.

Pantico Run is one of the larger tributaries that flows into Cat Point Creek from the East. Pantico Run forms part of the County boundary between Richmond and Westmoreland counties and helps form Omohundra Millpond. Parker Run and Sisson Run both contribute flow to Pantico Run.

South of Pantico Run, Belfield Creek enters Cat Point Creek from the East, just above of County Bridge (Rt. 637). Canal Swamp flows from the East into Cat Point Creek, while Scates Millstream flows in from the West. Woodville Creek is south of Canal Swamp as it enters Cat Point Creek from the west, and south of that Sexton Hill Branch.

Muddy Run is another of the major tributaries, similar in size to Pantico Run. Muddy Run also forms part of the Richmond and Westmoreland County boundary. Muddy Run and Webb Run join to form Connellee Millpond. Muddy Run flows from Connellee Millpond, and Hall and Lyell Branch add to the flow before it joins Cat Point Creek.

The final named tributary that adds flow to Cat Point Creek is Clark Run. Clark Run is north of the Town of Warsaw, and drains approximately one third of the Town. Clark Run flows into Mt. Airy Millpond, which eventually flows into Cat Point Creek.

There are numerous unnamed (and unmapped) tributaries that flow into Cat Point Creek. Every stream that flows into Cat Point Creek is important to the watershed, but, Pantico Creek and Muddy Run are the two major tributaries.

WETLANDS

Catpoint Creek has abundant wetlands with intrinsic value for wildlife as a result of the vast areas of undisturbed freshwater and estuarine wetlands. Wetlands even occur at the headwaters of Cat Point Creek above Montross. Kenna Swamp, Black Swamp, Poorhouse Swamp and Nanny Sanford Swamp all flow together to form Chandler's Millpond. (See Map #11, National Wetlands Inventory Wetlands, Appendix A.) Most tributaries have linear wetlands associated with them. There are also isolated wetlands that occur throughout the watershed. The lower (tidal) section has large areas of estuarine wetlands that form most of the floodplain. An example of wetlands that occur in the upper, freshwater section of Cat Point Creek, is a Palustrine, Forested, Broad Leaved, Seasonal Saturated wetland (NWI Code: PF01E). An example of a wetland the lower, brackish portion of the watershed, is a Estaurine, Intertidal, Emergent, Persistent, Irregular, Oligohaline wetland (NWI Code: E2EM1P6).

FLOODPLAINS

The Federal Emergency Management Agency (FEMA) mapped floodplains in the Northern Neck in the early 1990's. From the hard copy Flood Insurance Rate Maps (FIRMs) digital floodplain maps were created. Both FEMA 100-year and 500-year floodplains were mapped and digitized.

FEMA designated floodplains occur only in the lower Cat Point Creek watershed. (See Map #12, FEMA Floodplains, Appendix A.) Floodplains that do not meet FEMA criteria exist to some extent further upstream from the designated FEMA floodplains. The major flood threat in the lower Cat Point Creek watershed is from storm surges associated with hurricanes and tropical storms. Strong nor'easters also may raise tides in flood prone areas of Cat Point Creek, but, they are usually cause only minor tidal flooding. The majority of the floodplain in lower Cat Point Creek is made up of the 100-year floodplain (shown as light red areas on the map). At the most landward extent of the floodplain, in the gullies of the streams that feed the creek are isolated areas of the 500-year floodplain (shown as dark red on the map).

Flooding has the potential to impact some of the homes in the lower Cat Point Creek watershed during tropical storms and hurricanes. However, most of the houses are well back from the stream edges and an on high ground adjacent to the creek, so impacts are less severe than other areas in the county.

LAKES AND PONDS

There are no lakes in the Cat Point Creek Watershed, but, there are numerous ponds. Chandlers Mill Pond in the upper portion of the watershed is a Virginia Department of Game and Inland Fisheries pond, with a boat ramp and courtesy boat launch pier. Fishing is the main recreational activity that draws visitors there. No gasoline motors are allowed in the pond, although, electric trolling motors are permitted. Downstream, there is an

unnamed small pond south of Montross on Ruin Branch. Further downstream, Omohundra Pond is located on Pantico Run, and the county boundary line of Richmond and Westmoreland County splits the pond in two, with the majority of the pond residing in Richmond County. Continuing downstream, Connollee Millpond flows into Muddy Run and is also adjacent to the county boundary line, but the pond itself lies in Richmond County. Mt. Airy Millpond, lies in the lower portion of Cat Point Creek. It is the last notable pond before you reach the mouth of the creek.

WATER QUALITY

The water quality of Cat Point Creek is, for the most part good, save for a section between Ruin Branch and Canal Swamp. (See Map #13, Impaired Waters: 303(d) Waters, Appendix A.) The Virginia Department of Environmental Quality has identified this section of the creek as impaired for low pH. Thus, this 3.1 mile creek segment is assessed as not supporting of the aquatic life use support goal based on a pH standard violation rate of 14/27 recorded at monitoring station 3-CAT011.62, located at the Route 637 (County Bridge). The source of the impairment is considered unknown. Most who are involved with the watershed believe the low pH to be a natural occurrence. The slow moving water, coupled with the detritus and falling leaves in the stream, create tannic acids that lower pH. The Cat Point Creek Steering Committee has partnered with the Virginia Department of Environmental Quality to do some enhanced citizen monitoring in the impaired segment to help gather additional information to determine the true cause of the impairment. It is hoped that this impairment can be proven to be caused by non-anthropogenic (natural) sources, so that a lengthy and costly Total Maximum Daily Load (TMDL) study can be avoided. The waters outside of that segment of Cat Point Creek meets all of Virginia's State Water Quality Standards.

POINT SOURCES

There are three point sources of pollution in the Cat Point Creek Watershed. (See Map #14, Permitted Point Sources of Pollution.) Two point sources are near the headwaters in Montross, and include Northern Neck Coca-Cola Company (Virginia Pollution Discharge Elimination System (VPDES) Permit # VA0005665) and the Montross-Westmoreland Sewer Authority (VPDES Permit # VA0072729). Northern Neck Coca-Cola is a bottling plant in Montross, and is an industrial point source that discharges into state waters. The Montross-Westmoreland Sewer Authority is a municipal waster water treatment facility that also discharges into Cat Point Creek.

Wood Preservers, Inc. (VPDES Permit # VA0083127) is a wood treatment facility that pressure treats wood for outdoor use. It has had chemical releases in the past and is under a Resource Conservation and Recovery Act (RCRA) Corrective Action to limit exposure to humans. For more information on the corrective action, visit the PDF document listed below:

http://www.deq.state.va.us/waste/pdf/vad003113750a.pdf

According to that document, the contamination is present in groundwater and does not affect surface waters, "Impacted groundwater does not discharge into surface waters. Stormwater monitoring has identified detectable concentrations of inorganic wood preserving constituents (chromium, arsenic, copper) in facility drainage ditches discharges during storm events. These discharges are within permit limitations, and are therefore protective of human health and the environment." (Quoted from RCRA Corrective Action Environmental Indicator (EI) RCRIS Code (CA725), Current Human Exposures Under Control, 9/01/03.)

NON POINT SOURCES

Agricultural is the main land use in the watershed, and is, in all likelihood the largest contributor to non point source pollution. Forestry is also prevalent in the watershed and also causes some non point source pollution from harvesting. Both agricultural and silviculture activities could easily lead to increased sedimentation of Cat Point Creek. The entire Town of Montross is within the watershed, and all the stormwater that is generated in the town eventually flows into Cat Point Creek. Other potential non-point source load contributors are the numerous residential lawns within the watershed. A majority of farmers in the Northern Neck routinely use low-till or no-till cropping techniques to reduce non-point source pollution. In addition, many farmers grow winter cover crops to hold the soil in place during the wet winter months. Logging in the watershed could lead to sedimentation of the creek, and landowners should be educated on pre-harvest planning. The amount of inputs (per acre) to residential lawns often exceeds the inputs (per acres) of the agricultural community. Again, education of homeowners to help reduce the impacts of their lawn care practices to neighboring surface waters is always needed.

According to a recent USGS report, the Rappahannock River had the highest average annual sediment yield, about 325 tons per square mile, during the period 1985-2000 (Langland and Cronin, 2003. A Summary Report of Sediment Processes in the Chesapeake Bay and Watershed, USGS Water Resources Investigations Report 03-4123).

MONITORING

Water monitoring activity in the Cat Point Creek Watershed has concentrated on four sampling locations. Sampling is performed routinely at the Peach Grove Bridge (Rt. 622) in Montross, County Bridge (Rt. 637), the Newland Bridge (Rt. 624), and the Naylor's Beach Bridge. The purpose of the water monitoring activity is to record those parameters important in supporting life – plant and animal. Parameters measured include air and water temperature, dissolved oxygen, pH, salinity and turbidity. At times, a few other parameters such as nitrogen and phosphorous may also be measured although field determination of nutrient levels is highly inaccurate.

For the last couple years, Carol Balderson, Edith Dunn, Sandra Pierson, and Tiffany Patrick have been monitoring two times per month, twelve months a year. The locations of the long-term citizen monitoring sites are depicted on Map #15, Citizen Water Quality

Monitoring Sites. At this time, the Environmental Science class under the leadership of Kevin Goff, have been performing the same function. The field exercise has been highly beneficial in demonstrating the importance of these parameters to the students.

All data is recorded on the web site sponsored by the Alliance for the Chesapeake Bay, the local branch of which is located in Richmond. The Alliance has been important in volunteer training as well as the data collection. They perform statistical analysis of the data adding to the confidence in the data before it is then turned over to the Virginia Department of Environmental Quality.

WATER SUPPLY

Currently, Cat Point Creek is not being used as a water supply source. All potable water needs in the Northern Neck are provided by groundwater. However, with the deep aquifers water levels dropping approximately a foot every year, a time may come when Westmoreland or Richmond County will need to construct surface water impoundments in order to meet the water supply needs of its citizens.

The Richmond County Comprehensive Plan shows two water impoundments on tributaries to Cat Point Creek as Proposed Reservoir Sites. (See Map #16, Proposed Reservoirs, Appendix A.) In the northern portion of the watershed, below Newland, on Synder Swamp (a tributary creek to Cat Point Creek) a proposed reservoir is sited. As designed in a 1969 Northern Neck Economic Development Commission (NEDCO) Report, the reservoir (coded as RCP4) would have a drainage area of 3.73 square miles, cover 180 acres, and would allow a safe yield of 0.29 millions gallons of water per day.

The other reservoir is located northwest of the Town of Warsaw on Muddy Run. The reservoir would expand the area currently covered by Connollee Millpond. The most southern reservoir shown on Map #12, Proposed Reservoirs, is actually two reservoirs in the NEDCO Report, coded as RCP6 and RCP7. As designed, the two reservoirs would have a drainage area of 7.13 square miles, cover 337 acres, and would allow a safe yield of 0.61 millions gallons of water per day.

There are no current plans (within the next 5-10 years) to create these reservoirs, but since the reservoirs are mentioned in the Comprehensive Plan for the County, the possibility of constructing the reservoirs in the future is possible. As the Richmond County Comprehensive Plan states "…the citizens of Richmond County deserve, require, and demand a safe and adequate water supply."

BIOLOGICAL RESOURCES

TERRESTRIAL WILDLIFE

The Cat Point Creek watershed has an abundance of faunal species. Some of the more notable avifauna species that occur on Cat Point Creek include the federally threatened bald eagle, for which Cat Point Creek is a winter concentration area, and the recently

delisted peregrine falcon. Some notable species that are of conservation concern are the wood thrush, prairie warbler, short-eared owl, seaside sparrow, grasshopper sparrow, king rail, least bittern, whip-poor-will, great blue heron and great egrets, and pileated woodpecker to name a few. Notable mammals include the least shrew, meadow vole, native red fox (as opposed to the non-native red fox imported for sport hunting), southern flying squirrel, and the largest mammal in the watershed, the whitetailed deer. Notable invertebrate species include the eastern tiger swallowtail butterfly, spring azure butterfly and the Virginia creeper sphinx moth.

For a more detailed listing of species present in Cat Point Creek, see Appendix B at the end of the report. Appendix B (Cat Point Creek Species List) is derived from both the Virginia Wildlife Information Service, and confirmed sightings from Rappahannock River Wildlife Refuge Staff and associates from various biological surveys.

AQUATIC WILDLIFE

In 2002, fish were sampled by the Center for Environmental Studies at Virginia Commonwealth University Biologists. The fish were collected above County Bridge (Route 637), approximately in the middle of the main stem of Cat Point Creek, using the electro-shock technique. The sampling of fish species was conducted in conjunction with the Cat Point Creek beaver dam research project. The hypothesis tested was that the numerous beaver dams were impeding the spawning migration of herring and shad in the spring of the year. The results of the study were inconclusive, in part because 2002 was an extraordinarily dry year. The low flow of 2002 made for impediments that normally would not be impede shad migration. The listing below contains confirmed sightings of species not present in appendix B.

Native Fish Species

Alewife
American Eel
Blueback Herring
Bluespotted Sunfish
Bowfin
Brown Bullhead
Chain Pickerel
Creek Chubsucker
Eastern Mudminnow
Eastern Silvery Minnow
Eastern Mosquitofish
Flier
Gizzard Shad
Golden Shiner
Least Brook Lamprey
Longnose Gar
Mirgined Madtom
Mud Sunfish
Pirate Perch
Pumpkinseed
Redbreast Sunfish
Redfin Pickerel
Satinfin Shiner
Striped Bass
Swallowtail Shiner
Tadpole Madtom
Tesselated Darter
Yellow Bullhead
Yellow Perch
White Perch

Non-Native Species

Blue Catfish
Bluegill
Channel Catfish
Common Carp
Largemouth Bass
Redear Sunfish
Warmouth

A bowfin fish collected during the fish sampling survey. The fish was released unharmed after taking this picture.

RARE AND ENDANGERED SPECIES

Cat Point Creek has an abundant diversity of wildlife species. Some of those species are rare, endangered, of special concern, of general biodiversity interest, or natural heritage resources present. From the Species List (Appendix B), the bald eagle (bird) and sensitive joint-vetch (plant) are two federally listed species as threatened. Again, from Appendix B, federal species of concern are the northern diamondback terrapin, the black rail, and the cerulean warbler. (There is some debate as to whether the ranges of the diamondback terrapin and black rail extend this far up the Rappahannock, however, they are listed here since they are in the database.) The sole state listed threatened specie is the upland sandpiper. State species of concern include the atlantic sturgeon, brown creeper, dickcissel, great egret, purple finch, northern harrier, little blue heron, tri-colored heron, golden-crowned kinglet, common moorhen, yellow-crowned night-heron, red-breasted nuthatch, barn owl, forster's tern, least tern, hermit thrush, magnolia warbler, sedge wren, winter wren, and river otter, all of which occur in Cat Point Creek. There may be more threatened or endangered specie present.

From the maps of natural heritage resources, printed by the Department of Conservation and Recreation - Division of Natural Heritage show ten occurrences of federal listed general biodiversity interest species in Richmond County and two occurrences of natural heritage resources general location species. While the maps do not show specific species, it does hint at the importance of Cat Point Creek watershed to have 12 notable occurrences within the watershed.

IMPORTANT HABITATS

With the diverse wildlife species listed in Appendix B, undoubtedly there are many important habitats in the Cat Point Creek Watershed. In an effort to define important habitats, the Virginia Department of Conservation and Recreation, Division of Natural Heritage (DCR-DNH) was contacted. Watershed level (scale) habitat studies are not normally conducted by DCR-DNH. They are usually work at a larger scale (smaller areas), such as at the scale of individual project sites.

To provide a surrogate for a detailed watershed-wide wildlife habitat study, the newly completed Department of Conservation and Recreation's Conservation Lands Needs Assessment was used. (See Map #17, Major Natural Habitats) The assessment is based

on Maryland's Green Infrastructure Assessment Project, and is an effort to prioritize which areas are the most important natural, unfragmented lands ("Cores") based on considerations of biological and ecological value and integrity. Cores are unfragmented natural cover with at least 100 acres of interior habitat. Natural Landscape blocks are slightly fragmented aggregations of core areas plus contiguous natural cover. Natural Landscape Blocks should be viewed as supporting lands that buffer and protect the cores. Finally, corridors are linear habitats and that link cores and allow animal movement and seed and pollen transfer between cores.

RIPARIAN BUFFERS

Using the Virginia Base Mapping Program's new digital aerial photography, riparian buffers were examined and then digitized by NNPDC staff. The overall condition of riparian buffers throughout the watershed is excellent, with between 300-1000 feet of woodland adjacent to the stream in most areas of the upper watershed. In the upper watershed, the topography near the stream is rugged, so there is no agricultural land directly adjacent to the stream. The lower (tidal) portion has areas without riparian forested buffers or very thin forested buffers. (See Map #18, Riparian Forested Buffers, Appendix A.) The lower portion of the watershed has agricultural fields abutting the creek, and thus would be the most logical place to focus efforts to enhance riparian buffers.

CULTURAL RESOURCES

HISTORICAL RESOURCES

The Cat Point Creek watershed has a rich history of settlements of native American Indians before European settlers landed in Jamestown. No doubt many native american settlement sites exist in the areas around Cat Point Creek. The potential for archeological research in the watershed is high, and much can be learned from a careful examination of previous settlements. No effort was made to map the known historical archeological sites, however, this can be the focus for additional research in the future.

Western Europeans traveled up the Chesapeake Bay from Jamestown, and settled the area around Cat Point Creek in the early eighteenth century. Menokin, northwest of the town of Warsaw in Richmond County on a bluff near Cat Point Creek, was completed in 1771. Menokin was the home of Francis Lightfoot Lee, a signer of the Declaration of Independence, and a leader in Virginia politics in the colonial and Federal period. Menokin is a relatively small house, but is reknowned for its unusually formal stuccoed walls and dark stone trim. Much of Menokin is in a ruinous state, but portions of the house are still standing. The Menokin Foundation, a non-profit group dedicated to the rebuilding of Menokin, has received a $366,000 grant to begin planning the restoration of the structure.

Mount Airy is located very close to the Town of Warsaw limits, and was built by Colonel John Tayloe, III, in 1758, as his primary residence. Mount Airy is one of the most famous examples of Palladian architecture in America. The house has an interior courtyard, and was patterned after styles shown in James Gibbs book entitled "A Book of Architecture". On the grounds of Mount Airy is a pond, know as Mt. Airy Millpond, which flows into tidal Cat Point Creek. Currently, the house is occupied and is still serving the primary purpose for which it was built, as a residence.

RECREATION

The Cat Point Creek watershed is home to many forms of recreation, from hunting to hiking to canoeing to fishing. Species regularly sought for sport and food are waterfowl (ducks), turkey, and whitetail deer. Small game, such as rabbits and squirrels are also hunted occasionally. There are numerous hunt clubs in the watershed who lease the hunting rights from landowners with property near the creek. The fees collected from hunt clubs give a landowner income to pay his real estate taxes without having to harvest timber or otherwise alter the land. The proliferation of hunt clubs, is believed to contribute to the natural state of the Cat Point Creek watershed.

Although there are no public trails in the watershed, hiking does occur on private land. Often the hiking serves a dual purpose, either scouting for game, or for land management concerns. Canoeing is most prevalent in the lower tidal section of the creek, as there are numerous beaver dams and other obstructions that make the canoeing above the tidal portion an exercise in portage skills. Fishing in the creek is popular. In the springtime, local residents flock to County Bridge to attempt to catch herring and shad in their annual spawning migration. Also in the spring, fishing for catfish is popular in the lower tidal portion of the creek. Large specimens of the fish, in excess of 20 pounds have been pulled from the creek. In the summer and fall, croaker, spot, and striped bass can be caught near the mouth of the creek. People often congregate near the Naylor's Bridge in the summer to bottom fish for croaker, spot and gray trout.

Anglers test their skills during the annual Spring shad/herring migration on an upstream section of Cat Point Creek

There are no public access points on Cat Point Creek. Historically, bridge crossings have been informally used as fishing spots, sometimes causing problems with adjacent landowners. Richmond County is interested in increasing public water access points to

Cat Point Creek. Due to tough fiscal times facing Virginia's localities, there is little funding to accomplish the task.

There is only one boat ramp on Cat Point Creek proper, a private ramp open to the public at Heritage Park Resort. Heritage Park Resort is on Newland Road, and has a campground, furnished cabins, a swimming pool, lodge and a winery. Heritage Park resort rents canoes and the fee covers the use of the launching ramp. Those bringing private boats to the launch must pay admission and launching fees. Due to the low clearance of the Newland Bridge (Rt. 624), 3.5 feet at low tide, boats launch from the resort usually are confined to the section of creek from the bridge to the upper limit of open water. The facility recommends, due to limited water depths, launching only bassboats and flat bottom boats. Deep vee hulls and inboard-outboard boats usually require more depth than the water surrounding the ramp. The low clearance of the bridge also keeps larger powerboats from traveling up the creek from the Rappahannock River.

The Tayloe Unit of the Rappahannock River National Wildlife Refuge is located in the lower portion of Cat Point Creek watershed. The Refuge hopes to expand recreational opportunities within the refuge in the future. Trails and boardwalks for wildlife viewing are a possibility, as well as a potential canoe/kayak launching pier.

PUBLIC INPUT

PUBLIC MEETINGS

In order to solicit public input into this watershed management plan, four public meetings were held. The first meeting was held on January 21st at the Warsaw Town Hall Meeting Room at 7 p.m. in the evening. Nineteen people attended the meeting, not counting watershed planning support staff, and was a productive first meeting, with watershed issues and concerns being brought up and recorded. The second meeting was held on May 20th, at the A. T. Johnson Building at 7 p.m. in Montross. The third public meeting was held on September 15th, at the Warsaw Town Hall Meeting Room at 7 p.m. Approximately 15 people attended that meeting, as well as one member from both the Richmond and Westmoreland County Board of Supervisors.. The final public meeting was held on January 21st, 2004, 7 p.m. in Warsaw at the conference room of the Northern Neck Planning District Commission.

Discussing Issues at the final public meeting in Warsaw on January 21, 2004

On the whole, public input was good, although two of the meetings were sparsely attended. Citizens from the watershed are concerned about the health of the Creek, and how to protect "their" watershed from degradation. Many felt an attachment to the watershed, either through recreation, residence or proximity. Most citizens were surprised that the Creek is on the Virginia Impaired Waters 303(d) list, and most believe that the pH impairment is not anthropogenic in origin.

NEWSLETTERS

Ongoing efforts in the watershed have included the Cat Point Creek Newsletter, the "Cat Point Creek Land And Water News", which is created by staff of the Tidewater RC&D as a watershed-wide educational outreach effort. Approximately 1,500 landowner names and addresses were gathered from public county real property records for parcels inside of the Cat Point Creek watershed, and compiled into a mailing list for the newsletter. The newsletter has been in existence for approximately 8 years, and has been a good way to keep citizens in the watershed apprised of current activities.

In November 2002, the Cat Point Creek watershed newsletter, volume 11 heralded the beginning of the watershed management plan process and a flyer inserted in the newsletter announced the first public meeting. (To see this and other newsletters associated with this project, see Appendix D.) Volume 12 of the newsletter discussed the fish ladder and beaver dam project, the United States Fish and Wildlife Service "Partners for Fish and Wildlife" program, and announced the second Cat Point Creek Public Meeting in Montross. Volume 13, discussed the watershed management planning process, dissolved oxygen, the acquisition of a state-of-the-art water monitoring system, and announced the fourth public Cat Point Creek Public Meeting in Warsaw on January 21st. Volume 14, discussed the draft management plan and asked for input from stakeholders.

MAJOR ISSUES AND IMPLEMENTATION ACTIONS

ISSUE - Sedimentation

One major issue that came up at the first and second public meeting was the issue of sedimentation. Citizens noted that in the 1800's tobacco and forest products were loaded on bateaus near County Bridge (Rt. 637), and floated down the creek to Menokin Bay, where they were loaded on bigger boats that eventually traveled down the Rappahannock. Today, it is difficult to get an empty canoe from County Bridge to Menokin Bay, much less a loaded bateau. In addition, several noted that colonial ships that had a draft of 14 feet routinely navigated above Menokin Bay, where today, there is less than 4 feet of water depth.

Planning staff noted that farm conservation practices are a relatively new phenomena, and didn't get utilized until the 1950's at the earliest. Thus, the period from initial colonization to the 1950's, most farmers used conventional tilling and cropping methods

that allowed many tons of sediment per acre to erode from farm fields toward nearby waterways. Today, most farmers in the watershed use low-till, no-till, or contour cropping to reduce soil loss from their field. However, the legacy of historic sedimentation still remains, and has reduced the navigability of streams as a result.

An ancillary issue to sedimentation is shoreline erosion due to boat traffic. This also adds to the sediment load of the creek, and can lead to shoaling. Several waterfront landowners noted that in the warmer months, personal water craft (PWC's) zip around the lower creek creating wakes that help undercut and erode streambanks. Other citizens noted that water skiing in lower Cat Point Creek has been increasing. The ski boats generate a much larger wake than the PWC's, and they circle the same area over and over, pulling all the skiers in the boat over the course of a couple of hours. This repeated exposure of stream banks to boat wakes, the citizens say, has increased shoreline erosion in lower Cat Point Creek.

IMPLEMENTATION ACTION – Sedimentation - Agricultural

To reduce the amount of sediment entering the creek, there are various agricultural best management practices (BMP's) that are very effective. The beginning of applying best management practices is the creation of a farm conservation plan. Farm conservation plans are written examining the specific conditions found on each particular farm. The plan addresses the specific conditions found on those fields, and caters approaches that work best in each specific field. A few years ago, the NNPDC completed an inventory of farm conservation planning in the Northern Neck. (See Map #19, Status of Agricultural Farm Conservation Planning). As you can see, there are still farms which need a conservation plan (those farm fields depicted in gray). Conservation plans are mandatory if you apply for state or federal cost share programs, as well as for crop insurance. If a farmer does not participate in any of these programs, there is no law forcing him to have a farm conservation plan written. It is unrealistic to expect to get 100% coverage of farm plans, but 80-90% may be a reasonable percentage to strive towards.

Specific BMP's include no-till planting, which is one of the most effective ways to reduce soil loss from cultivated fields. Low-till planting is almost as effective in keeping soil on the field and out of the waterways. Other BMP's include contour cropping, where the row of crops are planted perpendicular to any slope in the field. Grassed waterways, and grass filter strips area also BMP's employed to reduce soil erosion on fields. The Natural Resource Conservation Service (NRCS) and the Virginia Department of Conservation (VDCR) offer cost-share funds to implement the above practices. The Northern Neck Soil and Water Conservation District (NNSWCD) is the agency that acts as the conduit for funds from government agriculture programs to local farmers. The NNSWCD assists local landowners in identifying problems on their land, and attempting to find a funding (typically a cost-share program) that will relieve some of the financial burden from the landowner for fixing the problem.

IMPLEMENTATION ACTION – Sedimentation – Silvicultural

Forest harvesting has the potential to cause sedimentation, especially if a site has not been properly stabilized prior to harvesting. The Department of Forestry can assist interested landowners in creating a pre-harvest plan, which lays out the roads, skidding trails, and loading area before harvesting and allows the soil to stabilize before heavy equipment begins operating. Other forestry BMP's are road berms and replanting skid trails and roads in grass immediately after harvesting ends.

IMPLEMENTATION ACTION – Sedimentation – Boat Traffic (shoreline erosion)

Repeated boat wakes have the potential to cause increased shoreline erosion. High speed boating from activities like water skiing creates much larger wakes that those associated with wakes created at cruising speed. The Virginia Marine Police have jurisdiction over navigable waterways, however, it is very hard to catch the boater in the act of producing a damaging wake. In addition, with limited staffing, other duties (homeland security) and few vessels, the Virginia Marine Police are spread pretty thin. Posted no wake zones are important for some areas, but if there is no one there to enforce it, the zones do not accomplish their task. A better approach would be boater education regarding the unintended consequences of boat wakes, through the Virginia Marine Police, the local Coast Guard Auxillary, and nearby marinas.

ISSUE – Newland Bridge (Rt. 624) Replacement

Another major issue that was brought up at the second public meeting was the upcoming replacement of the Newland Road Bridge (Rt. 624). The current bridge is very low, with only 3.5 feet of clearance between the bridge structure and the water at low tide. This low clearance has prohibited larger boats from venturing up the creek. In addition, the low bridge clearance has possibly reduced waterfront development pressure on Cat Point Creek, since one cannot get an average size boat to the Rappahannock River. The replacement of the bridge is slated for 2005, and the new bridge will have approximately 6 feet between the bridge structure and the water surface at low tide. While this is still a low clearance bridge, several attending the meeting wanted the new bridge to be the same height above the water as the old bridge. The Virginia Department of Transportation has stated that they need at least 6 feet of clearance so that workers can perform maintenance on the bridge structure.

IMPLEMENTATION ACTION – Increase Boat Traffic (bridge replacement)

The increased height of the new bridge, may spur additional waterfront development upstream. However, the new bridge is still not going to be very high (6 feet) at low tide, so even a typical 17-foot runabout would have a hard time clearing the bridge at anytime other than low tide. The county is in dire need for a replacement bridge. Currently the 15-ton weight limit imposed on the bridge by VDOT is very close to the weight of Richmond County fire trucks. (There have been discussions of lowering the weight limit to 10-tons, which might keep school buses from crossing the bridge.) VDOT would like to keep the bridge as low as possible, while having enough clearance for maintenance, since a higher bridge is more expensive to build.

ISSUE- Littering

Littering, especially around the Naylor's Beach area, was also discussed. Many local citizens blamed the littering on out of town tourists. Others mentioned that the various immigrants in the area are often seen fishing at the sites where litter accumulated. Unfortunately, the litter problem is not confined to the Cat Point Creek watershed. It has become a problem throughout Westmoreland and Richmond County as well as the other two counties of the Northern Neck.

IMPLEMENTATION ACTION – Littering

The Northern Neck Planning District Commission will be addressing the problem of littering through a regional effort to attack the litter problem. Partnering with the counties, towns, SWCD, RC&D, court systems and interested citizen groups, the hope is to have a comprehensive, four county regional approach to litter control. This would entail efforts to reduce the amount of litter, to educate persons on the problems that litter causes, to impose stiffer fines and sentences to those convicted of littering and to encourage community service sentences for litter pickup to those who are convicted of breaking any law. Through this four-pronged approach, it is hoped that the Northern Neck landscape can once again reflect the pride and respect of the citizens that live here.

ISSUE- Wildlife Habitat Enhancement – Wildlife Corridors

Much discussion was centered on wildlife habitat enhancement, and wildlife corridors. In the Richmond County Comprehensive Plan, the main stem section of the creek between County Bridge (Rt. 637) and Newland Bridge (Rt. 624) is designated as a wildlife corridor. The wildlife corridor is defined in the Richmond County Comprehensive Plan as being that area covered by open water and the 100-foot Chesapeake Bay Resource Protection Area (RPA) on both sides of the creek. Citizens wondered why the corridor only extends to the already protected 100-foot Chesapeake Bay RPA. Citizens in attendance asked "what additional protection is afforded by designating the RPA as a wildlife corridor?" The answer was that the County could turn down rezoning requests because the property is adjacent to the aforementioned wildlife corridor. Another question that surfaced was why the wildlife corridor didn't extend the full length of the creek that lies within the county. The reason predates the current land use administrator, so there was no clear answer to that question. Most citizens agreed that they would like to increase the portion of the creek that is designated a wildlife corridor to the entire length of the creek within the county boundaries. Most citizens agreed that increasing the width of the wildlife corridor would enhancement the movement of wildlife. Given the current political climate, that would likely meet with heavy opposition. With regards to Westmoreland County, their Comprehensive Plan does not have any wildlife corridors included in the County.

Existing stream corridors are already used by wildlife, whether they are designated in the Comprehensive Plan or not. To show the extent of stream corridors, a map was created showing all tributaries of Cat Point Creek with a 300 foot buffer on each side of the stream. (See Map # 20, Major Stream Corridors) While protecting these corridors would

have a positive effect on wildlife habitat and movement, they exist on private property. The map is intended to show the density of the network of corridors within the watershed.

IMPLEMENTATION ACTION – Wildlife Habitat Enhancement- Wildlife Corridors

Consensus was reached among citizens attending the public meetings that widening the wildlife corridor beyond the 100 foot RPA would enhance opportunities for wildlife. The current political climate in Richmond County would likely not support that type of initiative. Opposition from waterfront landowners would also be strong, and it will be a challenge increase in the width of the existing corridor. The citizens attending the public meeting agreed that increasing the north-south extent of the wildlife corridor would be much more likely to be approved. Therefore, consensus was reached to request that the County extend the wildlife corridor south from Newland Bridge down to the mouth of Cat Point Creek, and extend the corridor north from County Bridge to the Richmond County line as a part of the next Comprehensive Plan revision. As proposed, the wildlife corridor would then cover the entire main stem of Cat Point Creek in Richmond County from the county boundary line to the Rappahannock River.

Since Westmoreland County currently has no wildlife corridors in their Comprehensive Plan, citizens agreed to propose establishing a corridor along the main stem of Cat Point Creek, to include Chandler's Millpond and its tributaries. The proposal will be made to the Westmoreland Planning Commission, to coincide with the next County's Comprehensive Plan revision. The NNPDC will be the lead agency and would recommend these revisions to each county's Planning Commissions at the appropriate time, based on citizen input from the Cat Point Creek Public meetings.

ISSUE- Wildlife Corridors (Education)

When discussing the usefulness of designating wildlife corridors, there were many questions regarding the appropriate width of corridors, and what species would benefit the most from wildlife corridors. More questions were asked than were answered at the public meetings regarding wildlife corridors. Clearly there is the need for more information and education.

IMPLEMENTATION ACTION- Wildlife Corridors (Education)

The Department of Conservation and Recreation – Division of Natural Heritage deals with these kinds of issues daily, and they would be the most knowledgeable contact agency to help educate others on the basics of wildlife corridors. DCR-DNH could be available to educate at Cat Point Creek Steering meetings. When the time comes for the Comprehensive Plan revision in Richmond and Westmoreland County, staff from DCR-DNH will be invited to brief the respective planning commissions on the benefits of wildlife corridors, and the effect of width on the efficacy of the corridor. It is hoped that DCR-DNH staff could conduct these educational sessions within their current job duties, without the need for additional funding sources.

ISSUE - Status of Benthic Communities

The status of benthic communities is unknown. Since the stream is not listed on the 303(d) list of impaired waters for benthic impairment, it is assumed that the benthic community is healthy. However, how healthy, and how to measure such health is unknown. This ecosystem should be examined in depth in the next revision of this management plan.

IMPLEMENTATION ACTION – Status of Benthic Communities

Since DEQ is the lead agency in determining whether water bodies meet the Clean Water Act guidelines, so they should be knowledgeable on how to assess the stream for these organisms. Education regarding benthic organisms in a soft-bottomed stream should be high on the list of things needed so that a benchmark of Cat Point Creek's benthic community can be set. Since benthic organisms are one of the first indicators or stream impairment, they should be well documented. DEQ staff will be asked to educate the Cat Point Creek Steering Committee on benthic communities in general, and the Cat Point Creek community specifically before 2007.

ISSUE- pH Impaired, Total Maximum Daily Load, (TMDL) Stream Segment

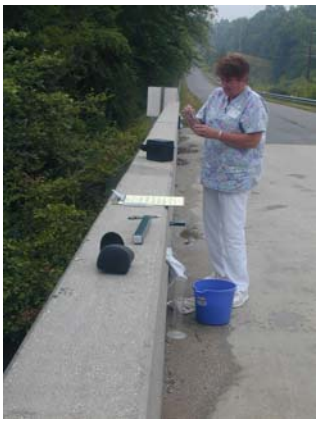
Most citizens were surprised when they were told that a section of Cat Point Creek did not meet State Water Quality Criteria in 1998, due to its low pH. When shown a map of the impaired segment (see Map #13, Impaired Waters: 303(d) Waters, Appendix A.), most citizens exclaimed that there are no human activities in that area that could possibly cause the impairment. The majority of people attending the meeting agreed that the impairment is most likely caused by natural factors, as opposed to human induced factors.

IMPLEMENTATION ACTION – pH Impaired, Total Maximum Daily Load, (TMDL) Stream Segment

The Cat Point Creek Steering Committee recently obtained a grant to purchase an advanced water quality monitoring test equipment to test water quality in Cat Point Creek. The unit, a Hydrolab©, can test for pH, salinity, temperature, and turbidity. In cooperation with the local Governor's School (which is comprised of academically gifted high school students), the Steering Committee has loaned the monitoring equipment to the school to take samples of ph in the tributaries that flow into the main stem of Cat Point Creek above and in the impaired segment. The tributary sampling allowed the Department of Environmental Quality (DEQ) to determine that the cause of the low pH problem for the segment between Ruin Branch and Canal Swamp was natural. DEQ is the lead agency with regards to TMDL development, and has submitted a report with the supplemental water quality data to the Environmental Protection Agency for review. In the report, DEQ proposes to classify the segment of stream as a "Class VII" water, which is the designation for natural, slow moving, acidic, swamp water. This classification allows pH levels down to 4. Other water bodies in Virginia have been designated as Class

VII, most notably, the Great Dismal Swamp in Southeastern Virginia. The segment in question on Cat Point Creek has pH values that approach 6, while the Great Dismal Swamp has values in the 4 to 5 range. If EPA approves the report, then DEQ can "de-list" the stream from the Virginia 303(d) Impaired Waters List, and forgo a full Total Maximum Daily Load study.

A volunteer tests water at County Bridge (Rt. 637) in Richmond County, using old techniques (i.e. before the purchase of the Hydrolab © unit)



ISSUE- Forested Riparian Buffers

Riparian Buffers were discussed, and most participants felt that the majority of the watershed has large tracts of forest adjacent to the creek, and that riparian buffers were already in place. When shown the aerial photo (see map #18, Forested Riparian Buffers) of the lower portion of the creek where agricultural fields surround the creek, with only a one-tree width buffer, most conceded that enhancing the buffers in this section would be have a positive effect.

IMPLEMENTATION ACTION – Forested Riparian Buffers

The Chesapeake Bay Act of 2000 (C2K) has a revised goal of restoring 10,000 miles of riparian forested buffers in the entire Chesapeake Bay Watershed by 2010. The signatory states have already surpassed the old goal of 2,010 miles by 2002, well before the deadline of 2010. Therefore, they set a new, ambitious goal of 10,000 miles of forested riparian buffers by 2010. 2010 miles of forested riparian buffer have already been planted, thus there is less than 8,000 miles to plant before 2010. As a result of this high-profile success, additional federal and state financial resources have been put into place to achieve the goal. The Department of Forestry is the lead agency charged with achieving this goal with assistance from the local soil and water conservation districts and NRCS. Whenever a farmer with fields adjacent to streams asks for assistance, the SWCD or NRCS staff can explore the possibility of enhancing the forested buffer, if the landowner is receptive. The main cost-share program available is the Conservation Reserve Enhancement Program (CREP), and that is administered by the NRCS. The lower portion of Cat Point Creek will be the focus of efforts from the NNSWCD to convince landowners to enhance their forested buffers.

ISSUE- Invasive Species (Phragmites)

Non-native species, specifically phragmites australis, has increasingly become a problem in the Cat Point Creek watershed specifically, and coastal Virginia in general. Phragmites is a very aggressive wetland plant that crowds out native wetland plant species, and "takes over" naturally diverse wetlands. Once in place, phragmites is very difficult to eradicate. Herbicides in combination with burning, repeat application of herbicides, and additional burning are the best method to control phragmites.

Monoculture stands of phragmites offer little habitat and food for traditional wetland wildlife. Phragmites colonizes wherever there is land disturbance, and the roots (or rhizomes) spread and propogate new plants. A single section of rhizome can float on the water for days. When it washes ashore, it can create a new colony of phragmites from a single root fragment.

IMPLEMENTATION ACTION – Invasive Species (Phragmites)

The Rappahannock Phragmites Action Committee (RPAC) is a successful partnership of private citizens and property owners, state and federal agencies, and non-governmental organizations whose mission is to halt the spread of the invasive strain of Phragmites in the lower Rappahannock River. The RPAC has delineated the distribution of Phragmites within the watershed, and successfully obtained several grants to control Phragmites and for public education activities. In addition, the RPAC has created a brochure to help landowners identify Phragmites, provided a source for technical assistance to landowners, coordinated aerial spraying between all affected landowners to increase cost efficiency, and financial assistance to private landowners to fund aerial herbicide application. (See Map #21), Known Occurences of Phragmites Australis, Appendix A.) The efforts of the Rappahannock Phragmites Action Committee is an example of successful partnering and economies of scale when an organization can pool the resources from diverse interests into a mutual, common goal. The efforts of the Rappahannock Phragmites Action Committee to control Phragmites stands should be lauded, and they will continue to be the lead group with regards to identifying and controlling Phragmites.

ISSUE- Forests – (Hunt Clubs)

Undisturbed forests are one of Cat Point Creek Watershed's most cherished assets. Land use value taxation is in place in both Richmond and Westmoreland Counties. Land use value taxation undoubtedly helps retain healthy, intact forests, by charging landowners reduced taxes on land in silviculture. This alleviates some of the tax burden on landowners. Hunt clubs are prevalent in the Northern Neck, and these clubs lease land to hunt on from willing landowners. These hunt clubs provide much needed income for landowners to pay real estate taxes and to keep from having to harvest the timber off their land.

IMPLEMENTATION ACTION – Forests - (Hunt Clubs)

Keeping the forest cover intact, and minimizing harvesting will help keep sediment out of the creek, so the additional income provided by hunt clubs to landowners is a form of conservation payment. Hunt clubs should be encouraged to continue to lease land from

landowners, as it adds land use stability to the watershed ecosystem. An ecosystem in transition has a very hard time stabilizing, thus minimizing transition is advantageous. Encouraging and supporting hunt clubs are vital in protecting the ecological health of the Cat Point Creek Watershed.

ISSUE- Forest Harvesting

Forest harvesting can adversely affect water quality if done improperly or on a wide scale. Best management practices can offset the effects of forest harvesting, and should be implemented wherever practicable. Forest harvesting will occur, and land should be able to generate income for landowners, so the harvesting in the most ecological sound manner is the best way to reduce impacts to water quality.

IMPLEMENTATION ACTION – Forest Harvesting

The Department of Forestry is the lead agency when it comes to assistance to landowners in reducing the environmental impacts from forest harvesting. Pre-harvest plans should be encouraged anytime a landowner asks for assistance. Additional site BMP's should be employed as site conditions warrant. Funding for these activities should be included in the existing operating budgets of the local county forester, as ongoing technical assistance.

ISSUE- Land Application of Biosolids

Land application of bio-solids has recently received much attention in the State, and in the Northern Neck. Until recently, oversight of bio-solid application has been the purview of the Virginia Department of Health, a state agency. The Virginia General Assembly passed a law in 2003 that gave localities the power to monitor and take test samples of bio-solids as they are applied, and be reimbursed for the cost of these activities, provided they pass a local ordinance authorizing a monitoring program. To date, neither Richmond or Westmoreland County has passed such an ordinance.

Improper land application of bio-solids can impact surface waters if applied too close to water bodies, if a storm event follows shortly after land application, or if the bio-solids are applied to land that is too steep. In addition, heavy metals could possibly accumulate in soil from bio-solid application. Monitoring is the key to protecting the surface and ground waters in your jurisdiction

IMPLEMENTATION ACTION – Land Application of Biosolids

The Cat Point Creek Steering Committee has recommended that both counties in the Cat Point Creek Watershed (Richmond and Westmoreland) adopt bio-solid monitoring ordinances and begin monitoring the bio-solids that are applied to agricultural lands in their County. Knowing what is being applied to the county land is an important responsibility for local government to protect the water supply and citizens health.

ISSUE- Farm Fragmentation

Loss of farmland, and fragmentation of existing farms have been occurring for years on the Northern Neck, and in the Cat Point Creek watershed. As the following scenario demonstrates, the issues are complex. As farmers age and pass away, their children often do not want to carry on the family tradition of farming. The children cannot afford the estate taxes, and cannot decide who gets the house, who gets the land, who gets the farm equipment, etc. Therefore, they either split the farm up so that each offspring gets a few acres, or they sell the land, which is often bought by a land speculator/developer. This leads to farm fragmentation.

IMPLEMENTATION ACTION – Farm Fragmentation

The average age of farmers in the Northern Neck is growing, with most being older than 55. Not many new farmers are taking their place. In an effort to analyze farm fragmentation, and other issues that have made the economic viability of farming questionable in Westmoreland County, the County has formed the Westmoreland Agricultural Preservation Committee. The Committee is exploring ways that traditional farmers can still make a profit in today's economy, while maintaining the open space and rural nature of farming. The Westmoreland Agricultural Preservation Committee has been existence for over a year, and is the lead organization when examining farm economic viability, and reducing farm fragmentation. In addition, the Tidewater RC&D has been involved in efforts to reduce farm fragmentation.

ISSUE – Groundwater (Water Supply)

The Commonwealth of Virginia is currently investigating water supply planning on a statewide scale with the Water Policy Technical Advisory Committee (WPTAC). The WPTAC is determining the best way for localities to plan for adequate water supplies, and to project growth in the future to estimate water supply needs. The committee has proposed that each locality (or region, if cooperation exists) undertakes the initial water supply planning, and then revises the plan every five years, much like the comprehensive planning process.

All of the potable water needs in the Northern Neck, and Cat Point Creek, are met by groundwater. As noted in the 2000 Northern Neck Groundwater Supply Report, the deep regional aquifers are dropping at the rate of a foot a year. There are only seven monitoring wells on the Northern Neck Peninsula, and that is not sufficient to characterize to drawdown of aquifers. The report suggests that 8-12 additional wells are needed to adequately characterize drawdown patterns.

IMPLEMENTATION ACTION – Groundwater (Water Supply)

The Northern Neck Planning District Commission (NNPDC) is involved in regional planning on behalf of its member counties, and water supply planning is an issue where the counties of the Northern Neck may decide to do a regional water supply plan. If the counties agree, the NNPDC would be the logical place to bring together all four counties information into a regional plan. It is hoped that the State would set aside a dedicated

funding source for water supply planning, perhaps from the State Drinking Water Revolving Loan Fund.

The NNPDC has, since the 2000, investigated ways to fund additional monitoring wells, and plans to continue to pursue that goal in the future. There is a plethora of monitoring wells in the Hampton Roads area, the Middle Peninsula and the Eastern Shore, but little data for the Northern Neck. With the continuing growth in Southern Maryland, it is believed that the Northern Neck region's aquifers will be impacted from withdrawals from Maryland. The NNPDC would like the Virginia Department of Environmental Quality to revive its monitoring well installation program that was discontinued years ago, and place a few additional monitoring wells in the Northern Neck region.

ISSUE – Anadromous Fish Spawning Impediments

The Cat Point Creek Steering Committee has been working with the Nature Conservancy through a grant from NOAA to investigate the possibility that beaver dams are an impediment to fish (shad/herring) migrating upstream to historic spawning areas. A denil type fish ladder was installed to aid in fish passage. Research in 2002 was inconclusive about whether shad and herring could traverse the beaver dams, as it was a drought year. The low flow in 2002, may have made the beaver dams impassable, while in a normal hydrologic year, the beaver dams would pose no barrier. The fish sampling species list in the Aquatic Wildlife section was collected as a result of this research project.

IMPLEMENTATION ACTION – Anadromous Fish Spawning Impediments

The Cat Point Creek Steering Committee will continue to investigate the role that beaver dams play in shad and herring migration. Historically, in the 1930's, shad and herring would traverse Cat Point Creek all the way up to Chandler's Millpond. At that time, however, the beaver population in Virginia was non-existent, as trapping had virtually eradicated the beaver. While opening the creek all the way up to Chandlers Millpond is not feasible today, opening parts of the middle section of Cat Point Creek is plausible. Chesapeake Bay Small Watershed Grants may be a possible funding source to further investigate the effect beaver dams have on fish spawning migration.

ISSUE – Anadromous Fish – Predation (non-native species)

As pointed out by the fish species list, blue catfish and channel catfish are a non-native species. Ironically, the catfish were introduced by the Virginia Department of Game and Inland Fisheries into the tidal Rappahannock River below Fredericksburg in 1974, 1975, and 1977; while channel catfish were stocked in 1975, 1987. Catfish gorge themselves on shad and herring in the spring, and pose a significant mortality rate on shad and herring. When the ecosystem did not have catfish as a predator, more shad and herring were able to reproduce.

IMPLEMENTATION ACTION – Anadromous Fish Predation (non-native species)

Catfish are a prized species for anglers in Cat Point Creek, and each spring, angler seek catfish for sport. Catfish as large as 20 lbs. have been harvested from Cat Point Creek. Eradication of catfish from the creek, while perhaps ecologically prudent, would meet the ire of sport fisherman. In addition, the logistics of eradication of catfish from the creek would be nearly impossible, since there is a viable population in the Rappahannock River, that would re-established shortly thereafter in Cat Point Creek. The citizens, in a public meeting, came up with the idea of a catfish fishing derby for Cat Point Creek. While the fish being caught in the contest will not make an impact in the total population of catfish in the creek, the event could be a focal point for conservation efforts in the watershed. The event could be a valuable educational opportunity, and at the same time be fun for all involved. A watershed event, such as this, can often bring people together from diverse interests and focus on a single goal, i.e. preserving Cat Point Creek. The Cat Point Creek Steering Committee will undertake the task of planning and organizing the Catfish fishing derby by 2007, hopefully tapping into some of the funds from the Chesapeake Bay Small Watershed Grant Program.

ISSUE – Urban Stormwater Runoff

Most of the Town of Warsaw and the Town of Montross was built before stormwater controls were required. At that time, the purpose of stormwater control was to get it away from buildings as quickly as possible, not worrying about peak flows or non-point source pollution. Since that time, it has become apparent that stormwater runoff can impact streams adversely, and that the stormwater needs to be treated before entering streams. The stormwater runoff from Warsaw and Montross undoubtedly impacts Cat Point Creek in some way.

IMPLEMENTATION ACTION – Urban Stormwater Runoff (The Town of Montross)

Low Impact Development (LID) is the newest way to take care of stormwater runoff in an environmentally friendly way. Low impact development seeks to mimic the natural hydraulic flow of a site, promoting infiltration into the ground, instead of conveying the water away from the site. Instead of building numerous stormwater detention ponds, or large regional stormwater detention facilities, the decentralized nature of LID allows each site to reduce its flow, so that only during peak flow events does water actually run off the site. Westmoreland County handles the stormwater regulations for the Town of Montross. The Westmoreland Land Use Office should encourage the use of LID practices in Montross wherever practicable. New construction is the logical place to install LID practices, although redevelopment offers potential for incorporating LID design principles.

IMPLEMENTATION ACTION – Urban Stormwater Runoff (The Town of Warsaw)

Warsaw has more of an acute stormwater problem than Montross, as water routinely ponds on Main Street after any sizable rainstorm. In addition, at the end of one of the main stormwater outlets (which flows into Cat Point Creek) there has been a “blowout” (i.e, tremendous erosion) from the elevated flows of water channeled by the VDOT stormwater conveyance system. The erosion is so acute, it has threatened an adjacent

building. For these and other reasons, Warsaw has sought outside help with regards to LID, and had embraced the concept enough to make it a part of the town's ordinance. Warsaw has been proactive, incorporating LID principles into a town ordinance that allows conventional stormwater practices (detention ponds) only after the developer has shown that LID is not practicable or cost-effective for the site. The Town of Warsaw has paved the way for other localities in the Northern Neck to incorporate LID principles into their ordinances. The Town of Warsaw should be commended on their forward thinking and codification of LID practices into a viable ordinance.

The Northern Neck Planning District Commission recently purchased the building and land where their current office is located in Warsaw. The site has a high percentage of impervious area, and has a conventional, dry, stormwater pond. The NNPDC hopes to leverage grant funds to retro-fit their property by incorporating low-impact design (LID) principles to reduce runoff and promote infiltration. The hope is that the NNPDC office complex, known as "The Regional Center", will become a showcase of how to retrofit LID into existing sites to both reduce stormwater volume, while at the same time, affording a higher level of treatment than conventional stormwater control techniques. This highly visible demonstration project would show the commitment the NNPDC has to improving water quality in the Northern Neck by leading by example.

ISSUE – Suburban Non-Point Source Pollution

Residential suburban life can contribute to significant non-point source pollution. Practices such as automobile care, lawn care, home maintenance, as well as other day-to-day activities can detrimentally affect nearby water resources (surface and ground water). Improper automobile maintenance including changing oil, antifreeze, and exterior washing, can all pollute waterways.

IMPLEMENTATION ACTION – Suburban Non-Point Source Pollution

Simple practices such as recycling used oil, promptly cleaning up spills, washing you car on the lawn instead of the driveway can effectively reduce the amount of pollution generated by daily activities. Lawn care is another place to reduce pollution. Fertilizing your lawn in the fall (instead of the Spring), composting grass clippings, and eliminating the practice of watering your lawn will all help the environment in one way or the other. Education of the general public is needed, to stress the fact that everyone contributes to pollution. If everyone consciously thought about their actions (and their consequences) then waterways would have less pollution to absorb. The Virginia Cooperative Extension has the expertise and personnel to help educate the public. In the Northern Neck, most people think of the extension agent as only aiding the farmer, however, educational programs have been created in other areas of the state that could easily be adapted for use in the Northern Neck. Cooperative extension agents are already in place in each county, and each has invaluable local knowledge. Workshops should be scheduled to help citizens become better stewards of their environment by slightly altering their day-to-day routines. If everyone adopts a more earth friendly attitude, the results in the watershed will be noticeable.

ISSUE – Limited Public Water Access

As mentioned in the background section there is only one boat ramp on Cat Point Creek (not counting the public boat ramp at Chandlers Millpond). Locals have used highway bridges as informal access points for bank fishing or launching of canoes or kayaks for years. Many citizens in both Richmond and Westmoreland counties want to enjoy the abundant water resources in the county, however, the majority do not own waterfront land. With almost all the land along Cat Point Creek in private hands, water-based recreational opportunities are few, unless you befriend a waterfront landowner.

IMPLEMENTATION ACTION – Limited Public Water Access

At the public meetings the consensus was that the Rappahannock River Wildlife Refuge would be the focus of recreational activities in the Cat Point Creek Watershed. Although their primary mission is as a wildlife refuge, there is potential for recreational opportunities, as long as they do not conflict with the primary mission. Trails, wildlife viewing platforms, and a canoe/kayak-launching pier were all discussed at the public meeting. (It should be noted that the manager of the Refuge was in attendance at the meeting and agreed to above-mentioned recreational possibilities.) The Refuge would be the logical place to focus recreation, as it is the only sizable publicly owned land property in the watershed. Funds may be available from the USF&WS, as well as DEQ's Coastal Program. In kind match for grant funds can be accrued by the use of volunteer labor, of which there were several volunteers at the public meeting.

ISSUE – Limited Hiking, Biking

There are limited hiking opportunities in the watershed. As mentioned above, the Refuge may be able help remedy that situation. Hiking and wildlife watching are becoming recreational activities that are being enjoyed by more and more citizens, especially with the baby boomers. Biking is also becoming more popular, especially "mountain biking" (off road bike). Although we have no mountains in the Cat Point Creek Watershed, there could be more opportunities for biking for interested citizens.

IMPLEMENTATION ACTION – Limited Hiking, Biking

The NNPDC has been investigating the possibility of creating a hiking, biking and equestrian trail in the Northern Neck. In other areas of the state with railroads, old railbeds have been used for trails with much success. Unfortunately, the Northern Neck does not have that infrastructure to capitalize on. However, we do have a power line that runs most of the length of the Northern Neck. You can see the power line as the white space between forested areas in Map #4, Major Forested Areas, Appendix A. The power line almost bisects the Cat Point Creek Watershed. Preliminary work has begun to lay the groundwork for the trail, however, there has been some resistance by local landowners. It is hoped that in the upcoming years that landowners will see that the benefits from the trail outweigh any negative effects. The Intermodal Surface Transportation Enhancement Act (ISTEA, now called TEA-21) offers grants for such intermodal (walking, biking, riding) enhancement projects. Although not slated for the near future, it is hoped that the Northern Neck Hiking, Biking and Equestrian Trail will someday become a reality.

Revision Schedule

The Cat Point Creek Watershed Management Plan is envisioned to be a "living" document that evolves as conditions in the watershed change. New issues will crop up, while others will be accomplished, or become less important as they once were. With this in mind, the revision schedule for the Watershed Management Plan will be a period of five years from 2004. In 2009, given available funding sources, the Watershed Management Plan will be updated, revised and re-written. It is hoped that most of the goals of the plan will be met by then, however, any progress towards the goals should be viewed as a success.

One of the most important assets that the Cat Point Creek Watershed has is interested and involved citizens. With continued support from the people that live, work and play in the watershed, there is almost limitless potential to what can be accomplished.

APPENDIX A

List of Maps

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Map #4, Forest Cover
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Map #7, Nitrate Leaching Potential
Map #8, Pesticide Leaching Potential
Map #9, Slopes
Map #10, Historic Landfills
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Map #12, FEMA Floodplains
Map #13, Impaired Waters: 303(d) Waters
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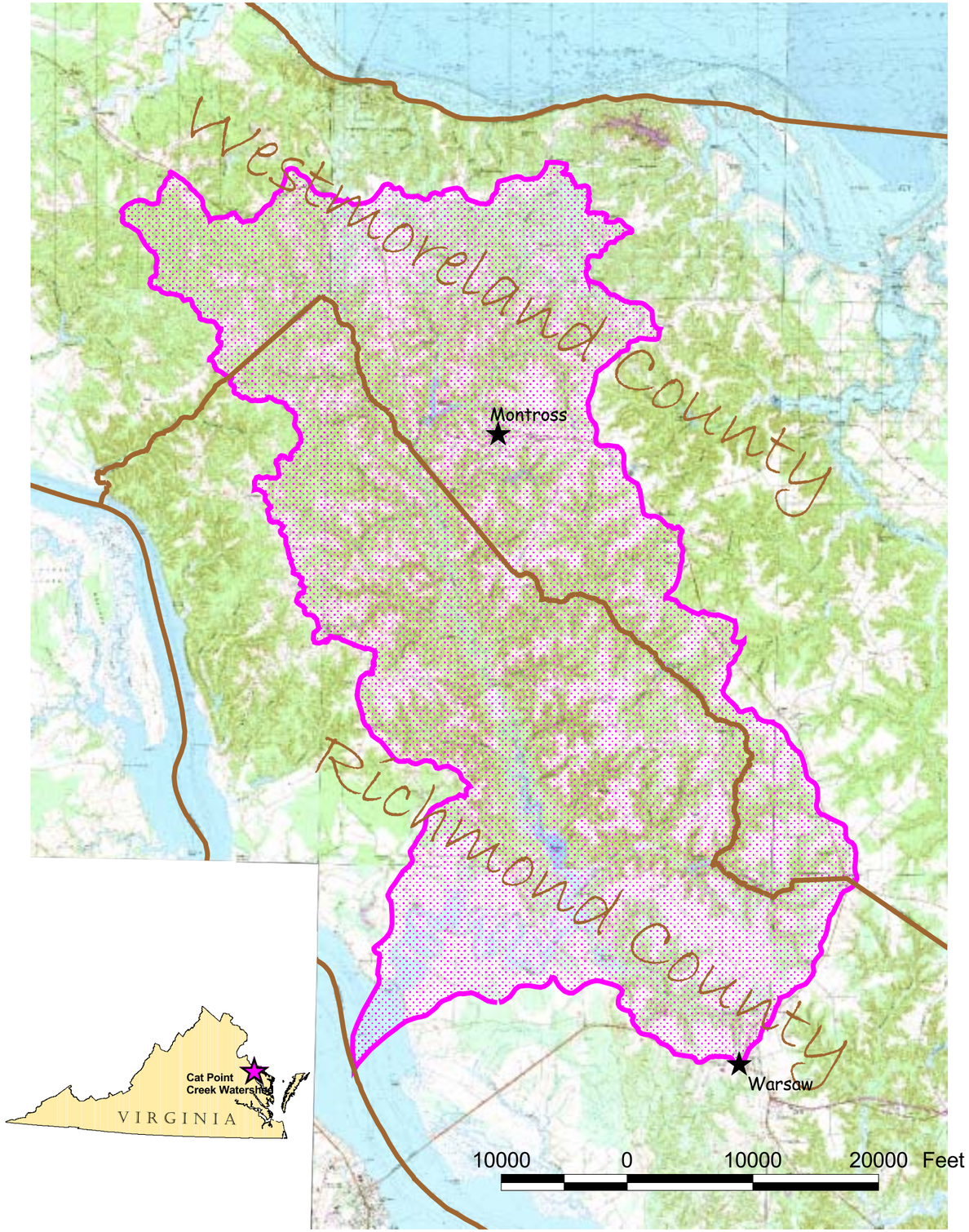
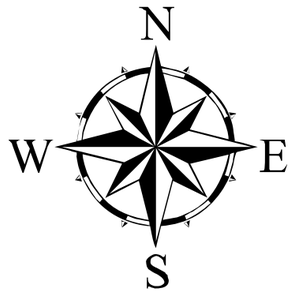
Map #15, Citizen Water Quality Monitoring Sites
Map #16, Proposed Reservoirs
Map #17, Major Natural Habitats
Map #18, Riparian Forested Buffers
Map #19, Status of Agricultural Conservation Planning
Map #20, Major Stream Corridors
Map #21, Known Occurrences of Phragmites Australis

Maps

Cat Point Creek Watershed Management Plan Environmental Maps: Location Map





Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Major Streams: USGS 1:100,000 Hydrography converted from orginal DLG Format.
USGS Quads: Scanned USGS 1:24,000 Quads

This map was funded by the Environmental Protection Agency's Chesapeake Bay Program through the Virginia Department of Conservation and Recreation, via grant agreement number BAY-2--2-22-SR.

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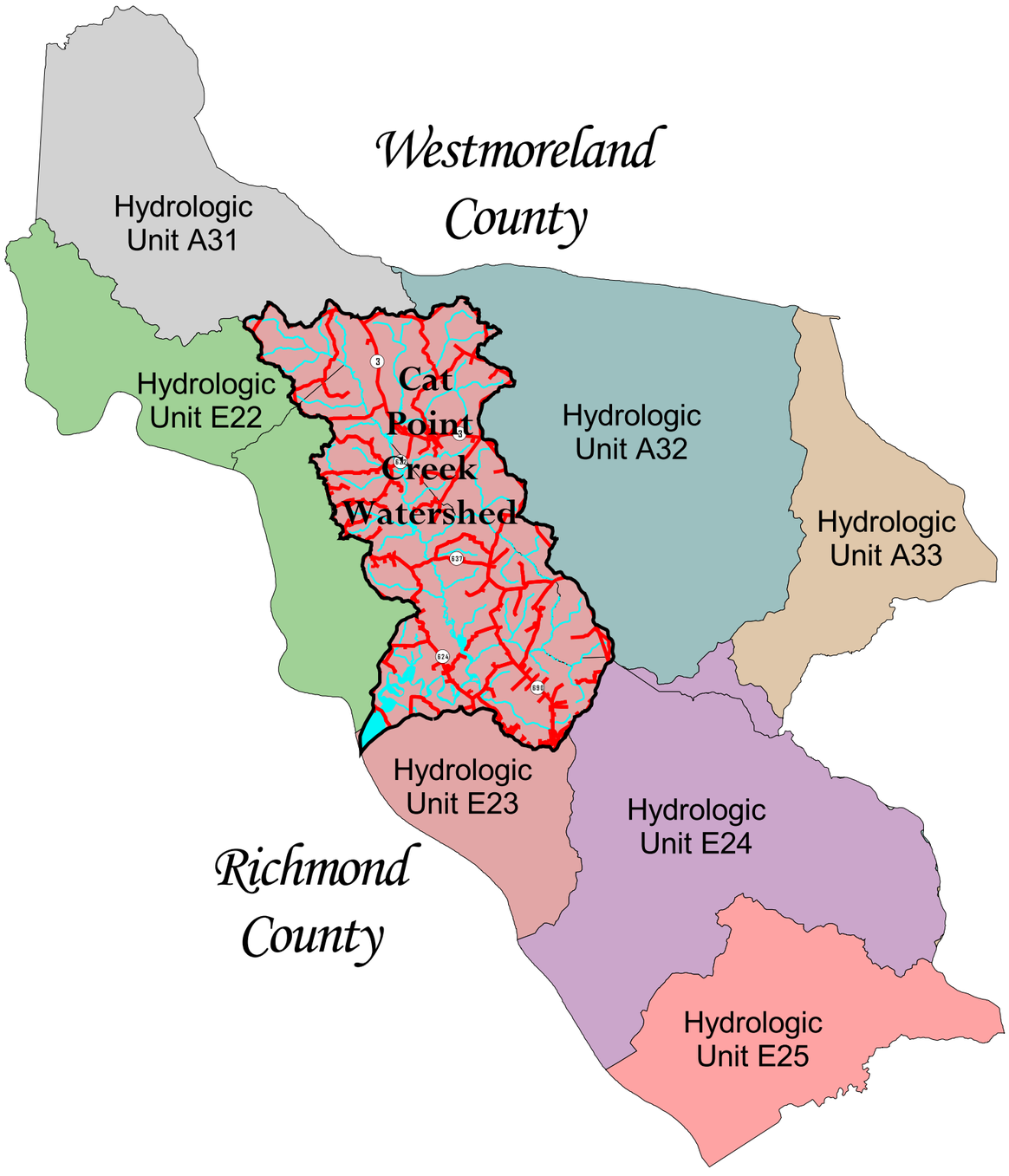
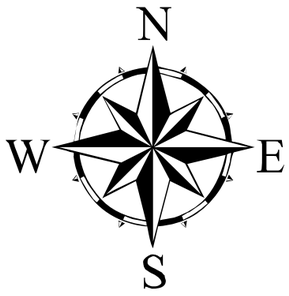
Map 2

Cat Point Creek Watershed Management Plan Environmental Maps: Hydrologic Units





Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: Hydrologic Units: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Major Streams: USGS 1:100,000 Hydrography converted from orginal DLG Format.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.

This map was funded by the Environmental Protection Agency's Chesapeake Bay Program through the Virginia Department of Conservation and Recreation, via grant agreement number BAY-2002-22-SR.

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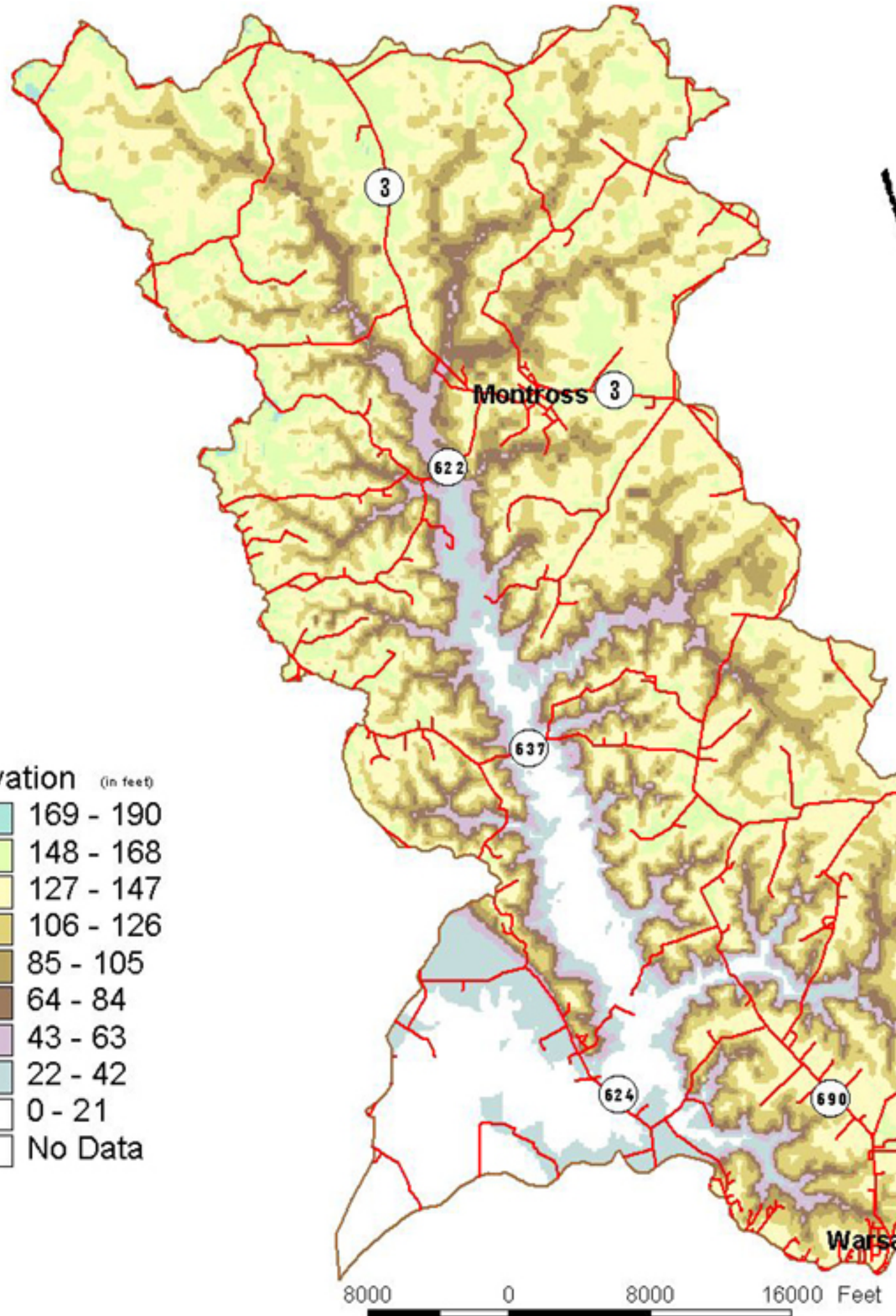
Map 3

Cat Point Creek Watershed Management Plan Environmental Maps: Elevation



Elevation (in feet)

- 169 - 190
- 148 - 168
- 127 - 147
- 106 - 126
- 85 - 105
- 64 - 84
- 43 - 63
- 22 - 42
- 0 - 21
- No Data

Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Elevation: Interpolated from USGS 1:24,000 Topographic Maps; VirGIS Project, ISSL-Virginia Tech (funded by The Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.

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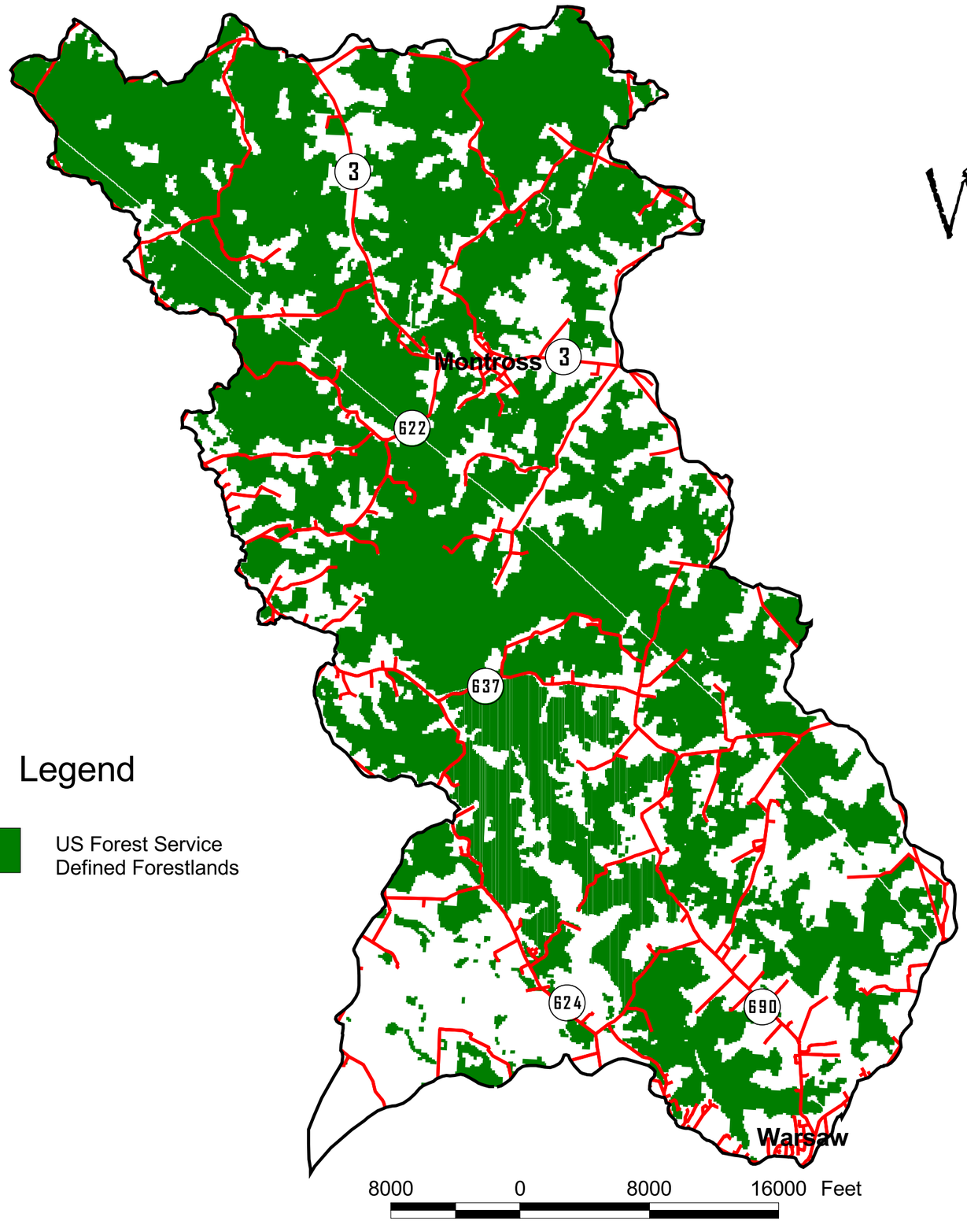
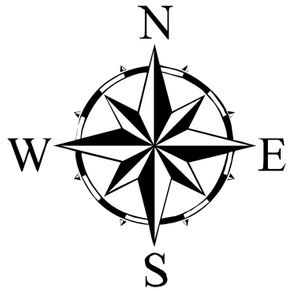
Map 4

Cat Point Creek Watershed Management Plan Environmental Maps: Forest Cover



Legend

US Forest Service Defined Forestlands



Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Forest Cover: Virginia Department of Forestry, 2000 Forest Cover (as defined by the US Forest Service (lands with at least a stocking of 10% cover of live forest trees of any size, or formerly having such tree cover, and not currently developed for non-forest use. The minimum area for classification is one acre with a minimum width of 120 feet). Classified from Landsat 7 ETM+ satellite imagery from 1999-2000.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.

This map was funded by the Environmental Protection Agency's Chesapeake Bay Program through the Virginia Department of Conservation and Recreation, via grant agreement number BAY-2002-22-SR.

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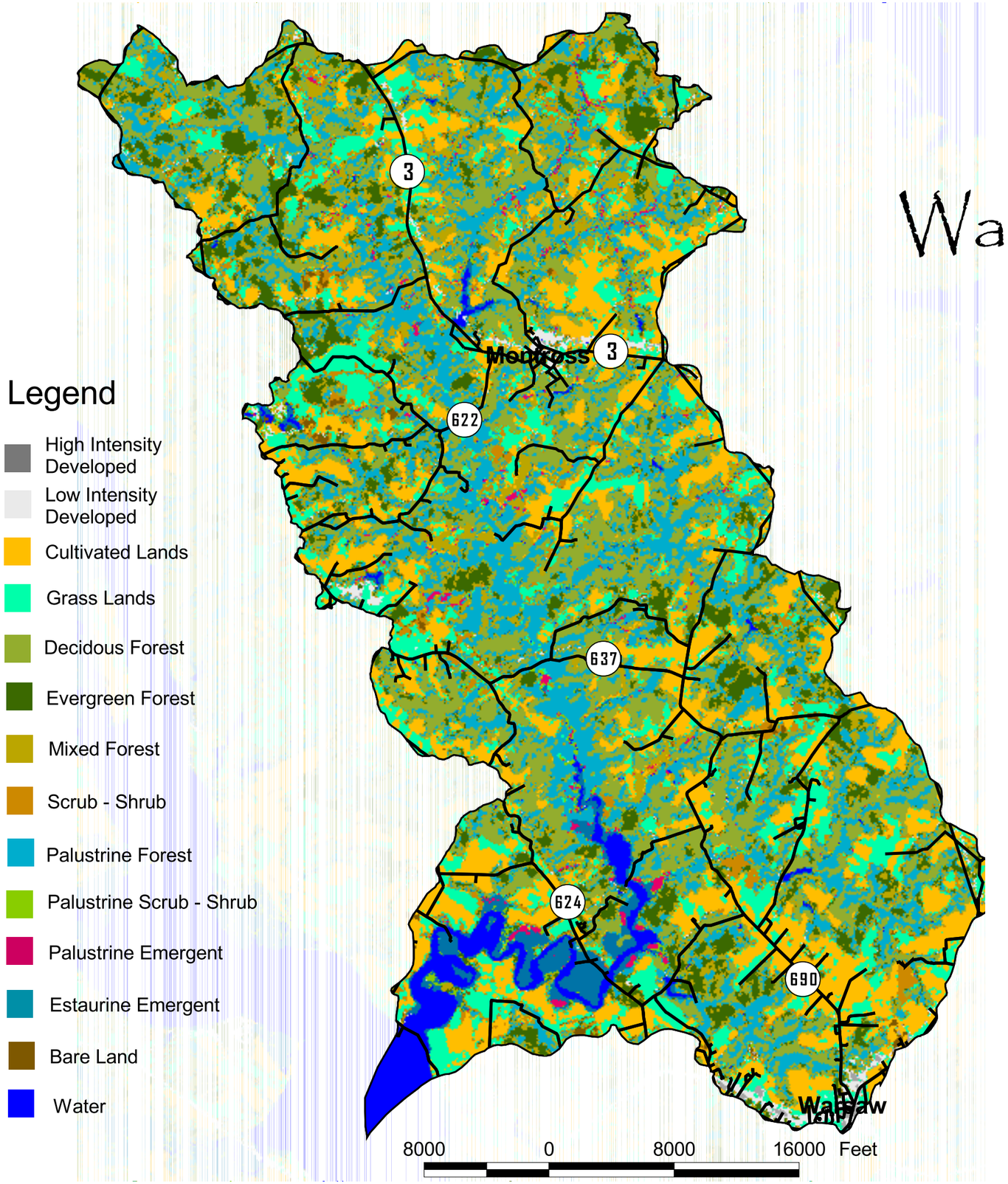
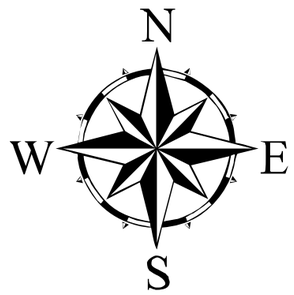
Map 5

Cat Point Creek Watershed Management Plan Environmental Maps: Land Cover





Map prepared by the Northern Neck Planning District Commission, August 2003.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Land Cover: Digital Land Cover - LC1534-97, 2000; Center for Coastal Resources Management, Comprehensive Coastal Inventory Program, Virginia Institute of Marine Science, College of William and Mary.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.

This map was funded by the Environmental Protection Agency's Chesapeake Bay Program through the Virginia Department of Conservation and Recreation, via grant agreement number BAY-2002-22-SR.

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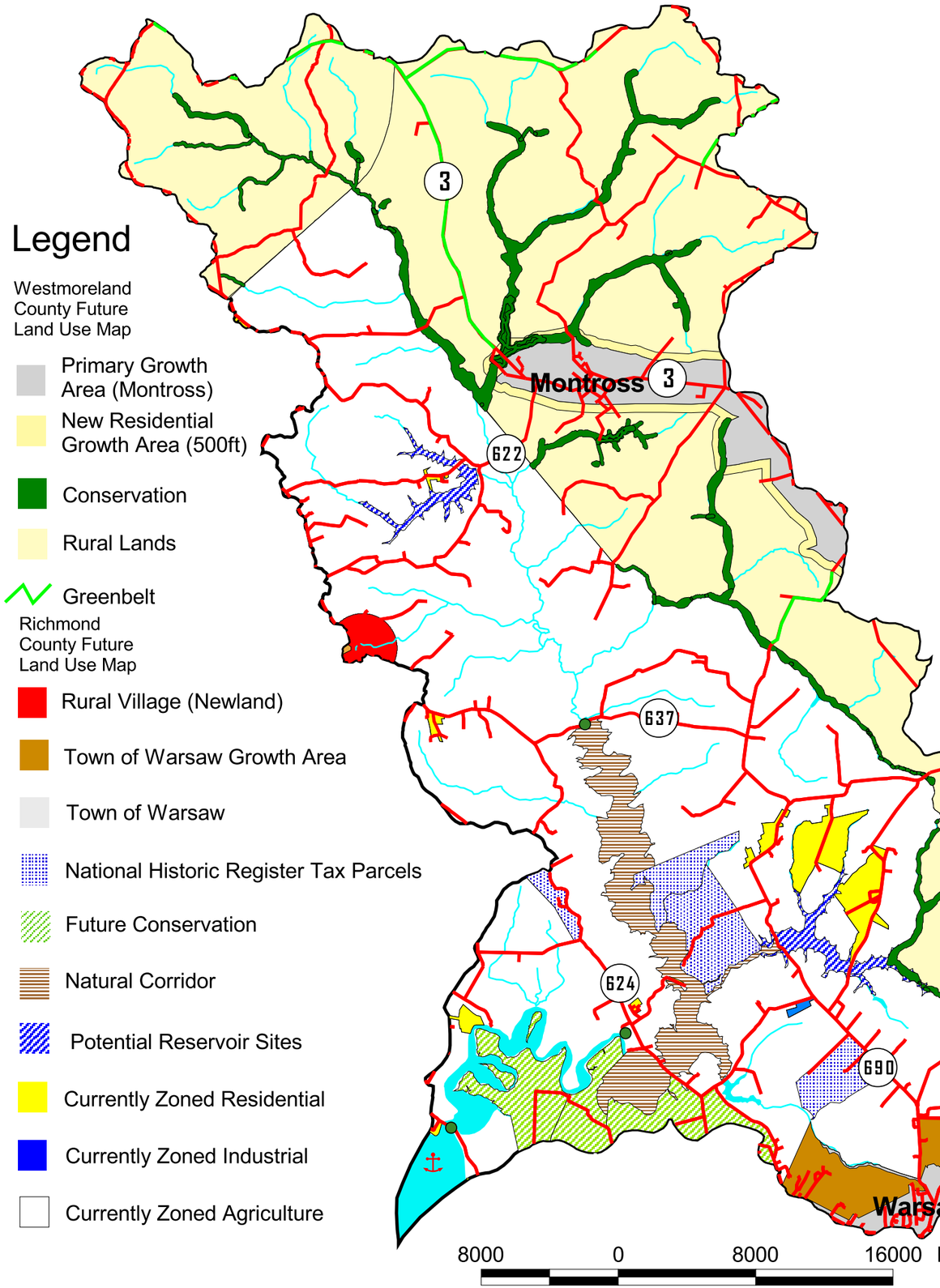
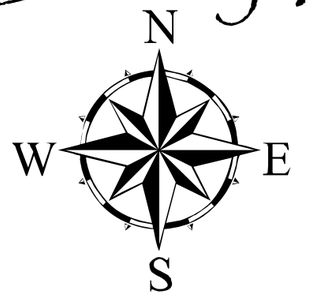
Map 6

Cat Point Creek Watershed Management Plan Environmental Maps: County Future Land Use





Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Future Land Use Map Layers: Westmoreland County Comprehensive Plan Future Land Use Map, Adopted May 4, 1999 and Richmond County Comprehensive Plan Future Land Use Map, Adopted March 20, 2001.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.
This map was funded by the Environmental Protection Agency's Chesapeake Bay Program through the Virginia Department of Conservation and Recreation, via grant agreement number BAY-2002-22-SR.

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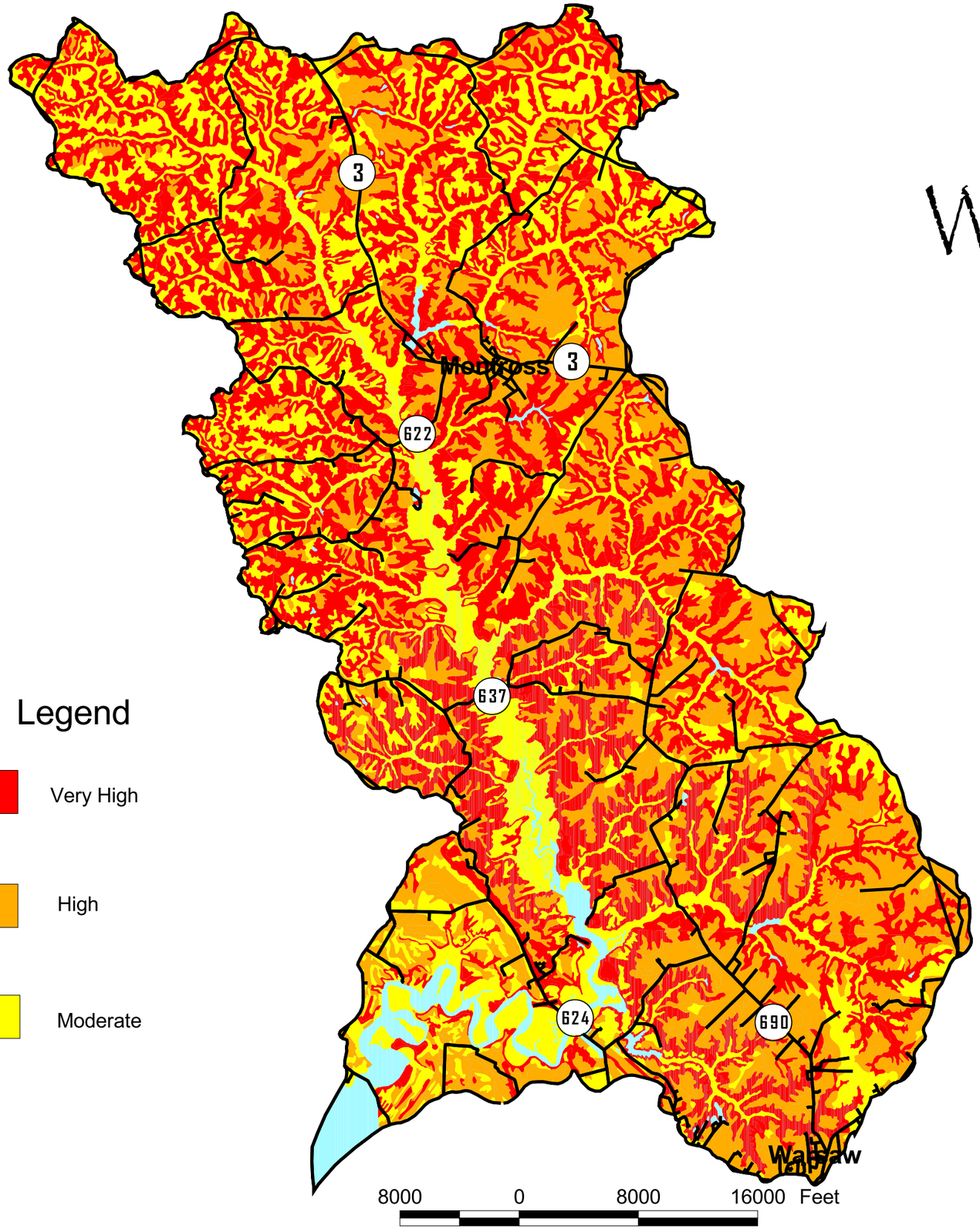
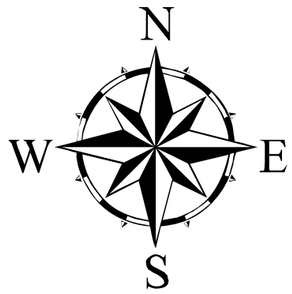
Map 7

Cat Point Creek Watershed Management Plan Environmental Maps: Nitrate Leachability



Legend

- Very High
- High
- Moderate



Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Nitrate Leachability: National Resources Conservation Service (NRCS) Soil Table, attached to USDA SSURGO Soils, Westmoreland and Richmond County, 2000.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.

This map was funded by the Environmental Protection Agency's Chesapeake Bay Program through the Virginia Department of Conservation and Recreation, via grant agreement number BAY-2002-22-SR.

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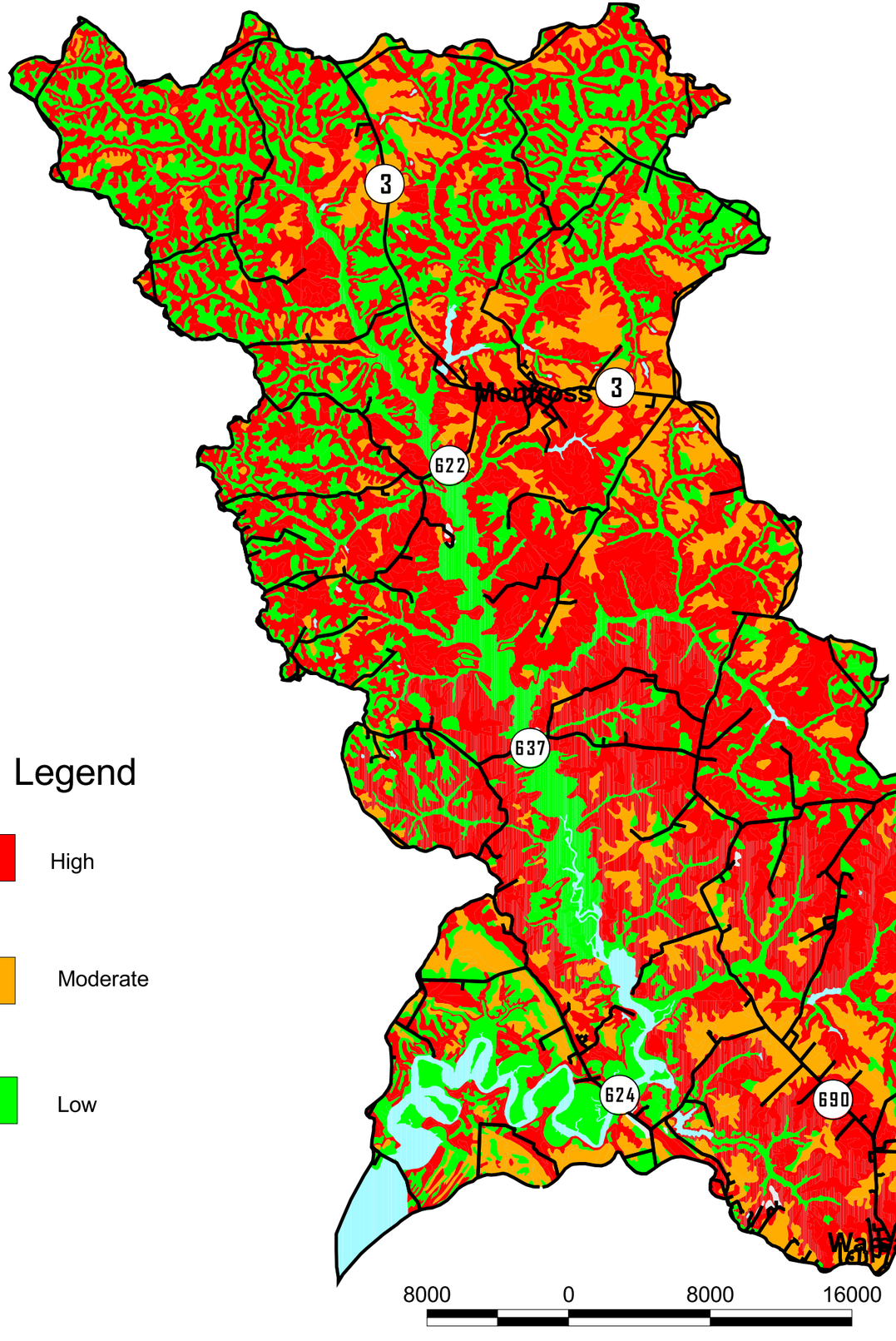
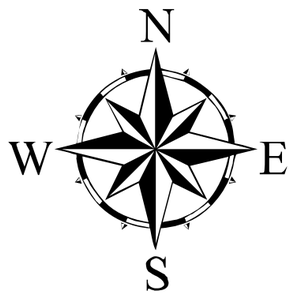
Map 8

Cat Point Creek Watershed Management Plan Environmental Maps: Pesticide Leachability



Legend

- High
- Moderate
- Low



Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Nitrate Leachability: National Resources Conservation Service (NRCS) Soil Table, attached to USDA SSURGO Soils, Westmoreland and Richmond County, 2000.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.

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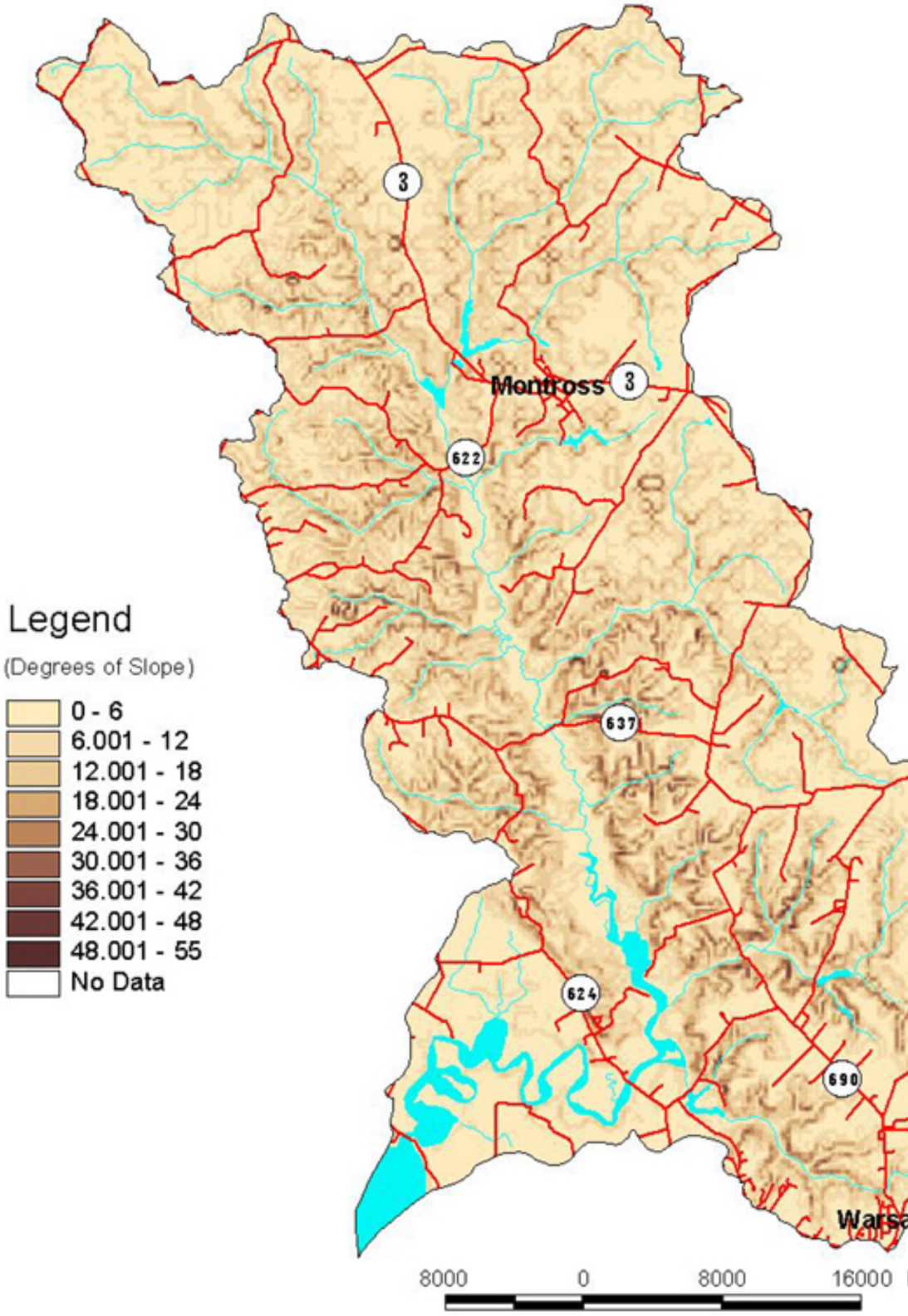
Map 9

Cat Point Creek Watershed Management Plan

Environmental Maps: Slopes



Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
FEMA Flooplains: Digitized from FEMA FIRM Panels, QA/QC'ed by Dewberry and Davis; VirGIS Project (funded by the Department of Conservation and Recreation, Division of Soil and Water), 1996.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.

This map was funded by the Environmental Protection Agency's Chesapeake Bay Program through the Virginia Department of Conservation and Recreation, via grant agreement number BAY-2002-22-SR.

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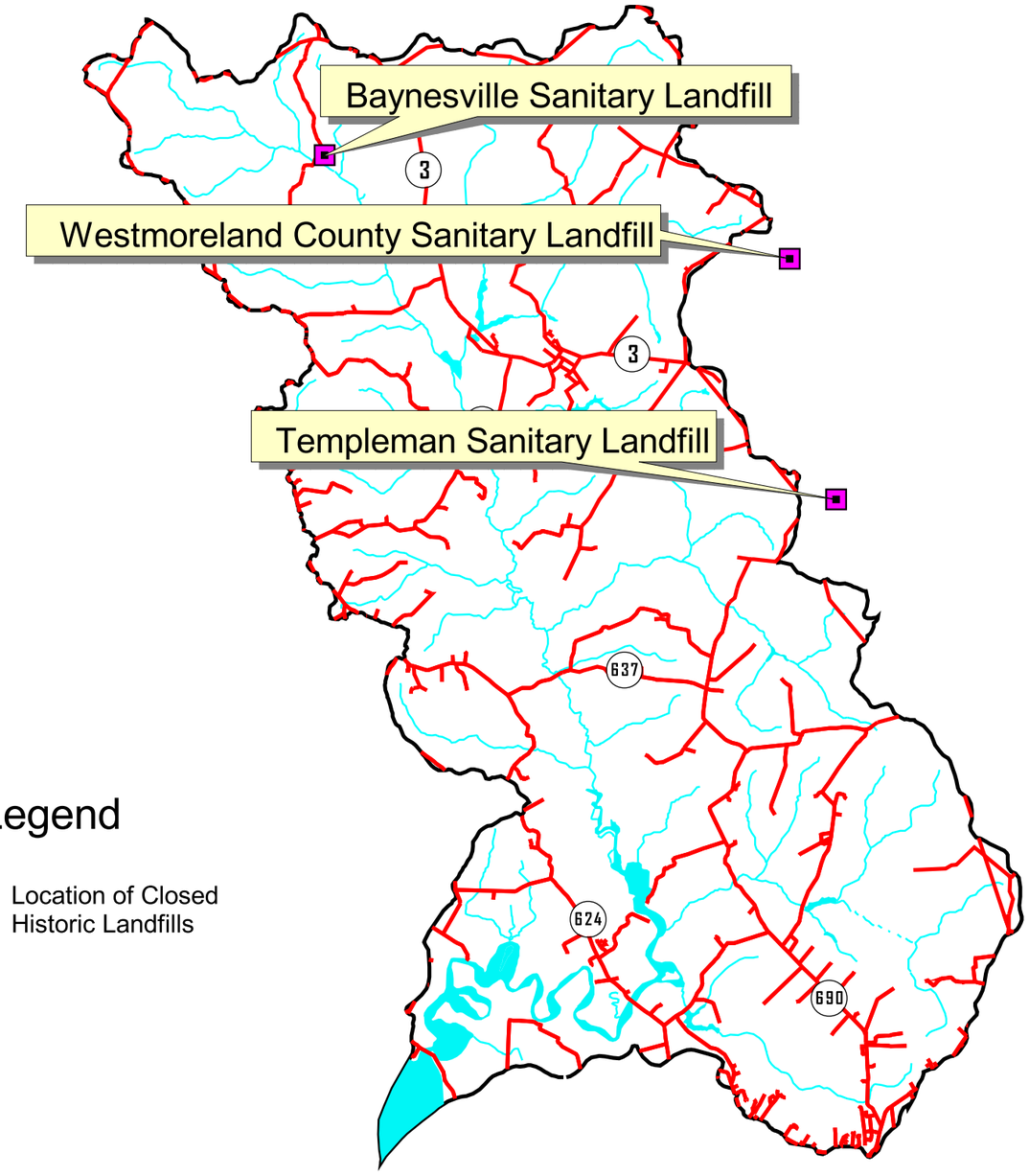
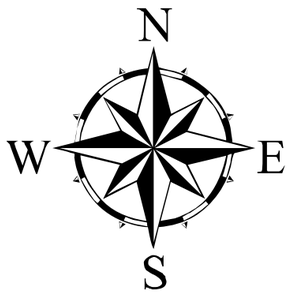
Cat Point Creek Watershed Management Plan Environmental Maps: Historic Landfills



Legend

Location of Closed Historic Landfills



Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Major Streams: USGS 1:100,000 Hydrography converted from original DLG Format.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.
Landfill Locations: Digitized from interviews with county land use staff.

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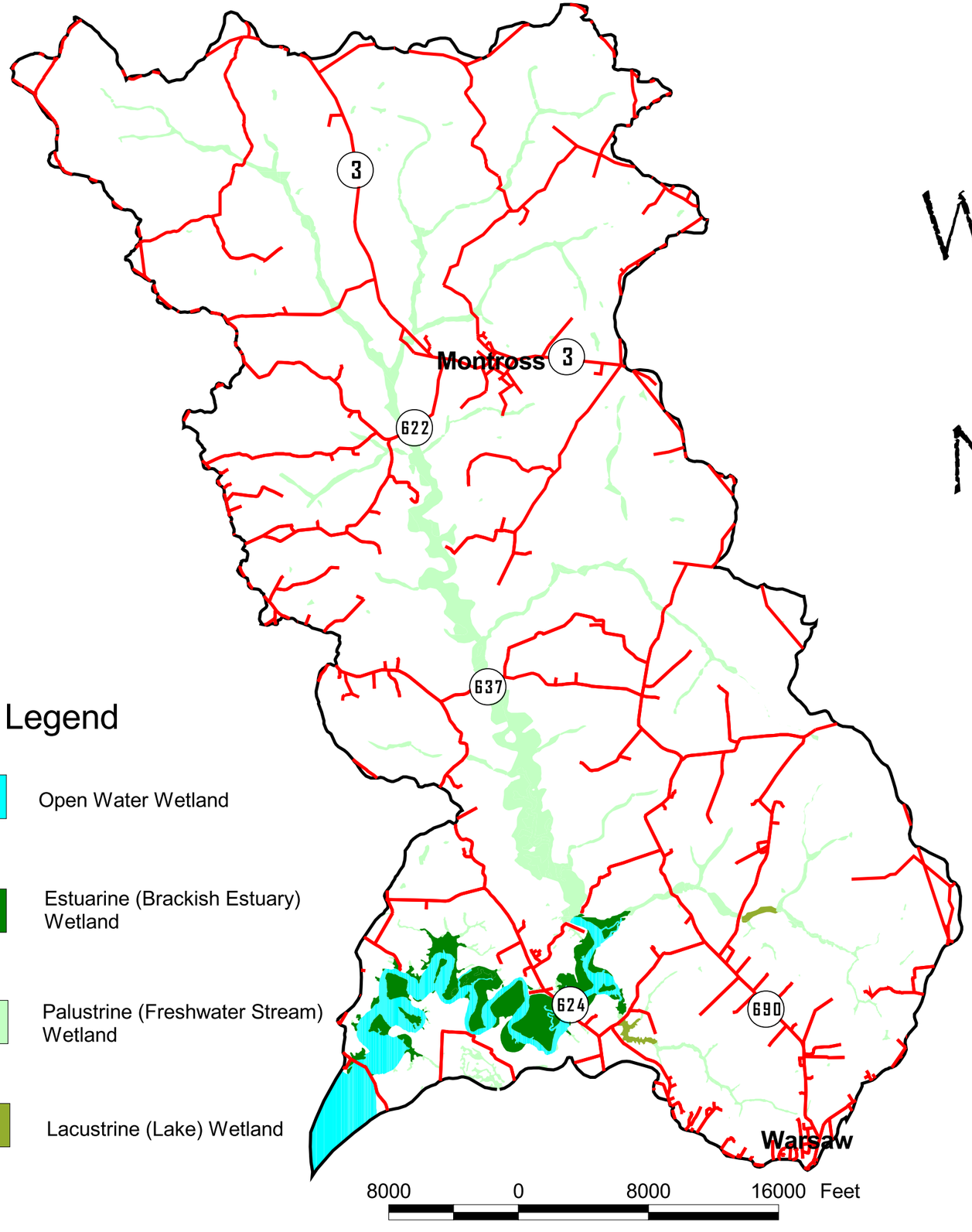
Map 11

Cat Point Creek Watershed Management Plan

Environmental Maps: National Wetlands Inventory

Wetlands



Legend

- Open Water Wetland
- Estuarine (Brackish Estuary) Wetland
- Palustrine (Freshwater Stream) Wetland
- Lacustrine (Lake) Wetland

N
W
E
S

Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
National Wetlands Inventory: US Fish and Wildlife Service, delineated on USGS 1:24,000 Topographic Maps; partially digitized by NNPDC staff, date of original hard copy maps, 1977.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.

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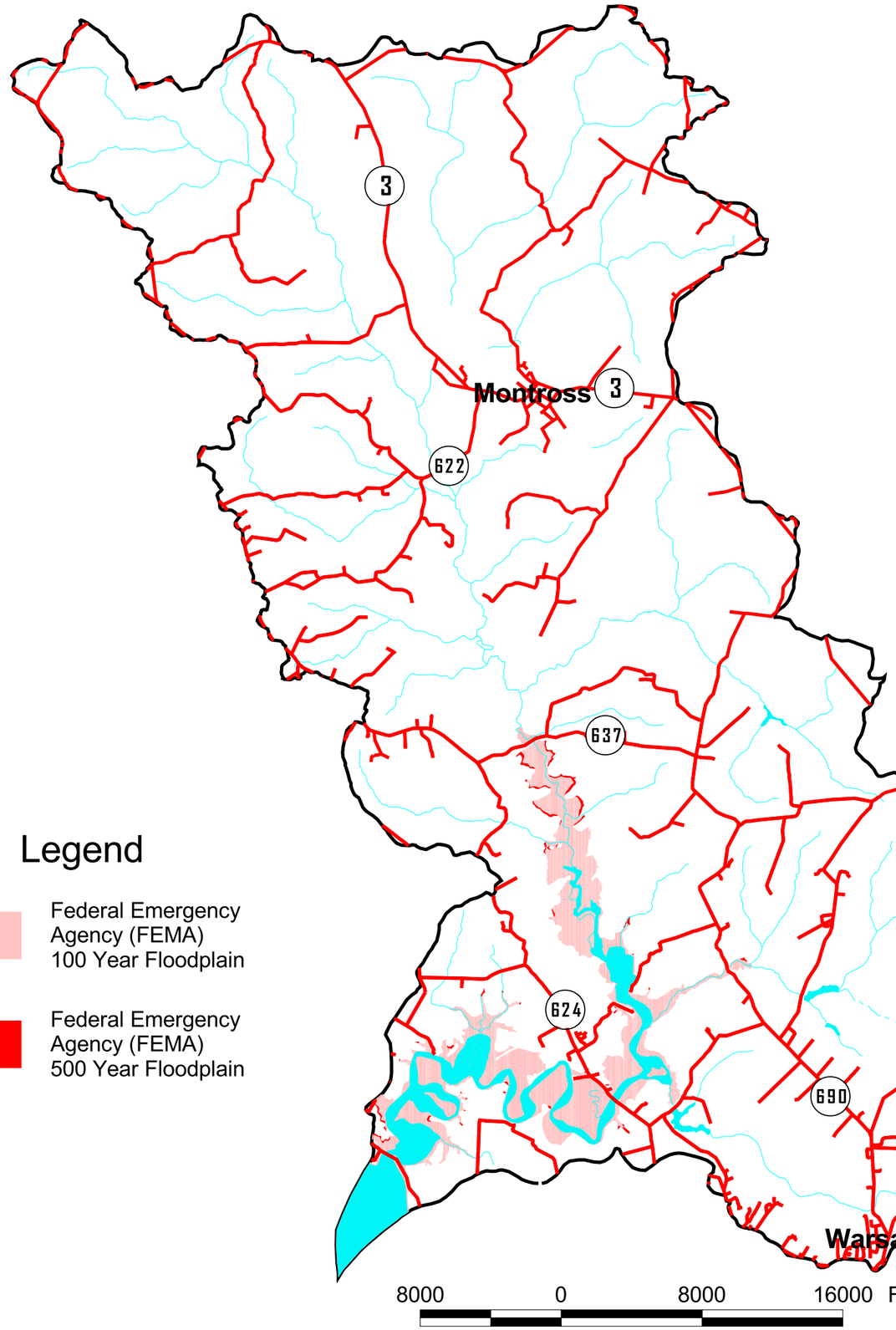
Map 12

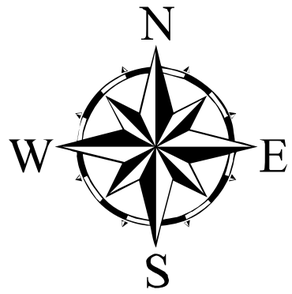
Cat Point Creek Watershed Management Plan

Environmental Maps: FEMA Floodplains



Legend

- Federal Emergency Agency (FEMA) 100 Year Floodplain
- Federal Emergency Agency (FEMA) 500 Year Floodplain



Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
FEMA Flooplains: Digitized from FEMA FIRM Panels, QA/QC'ed by Dewberry and Davis; VirGIS Project (funded by the Department of Conservation and Recreation, Division of Soil and Water), 1996.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.
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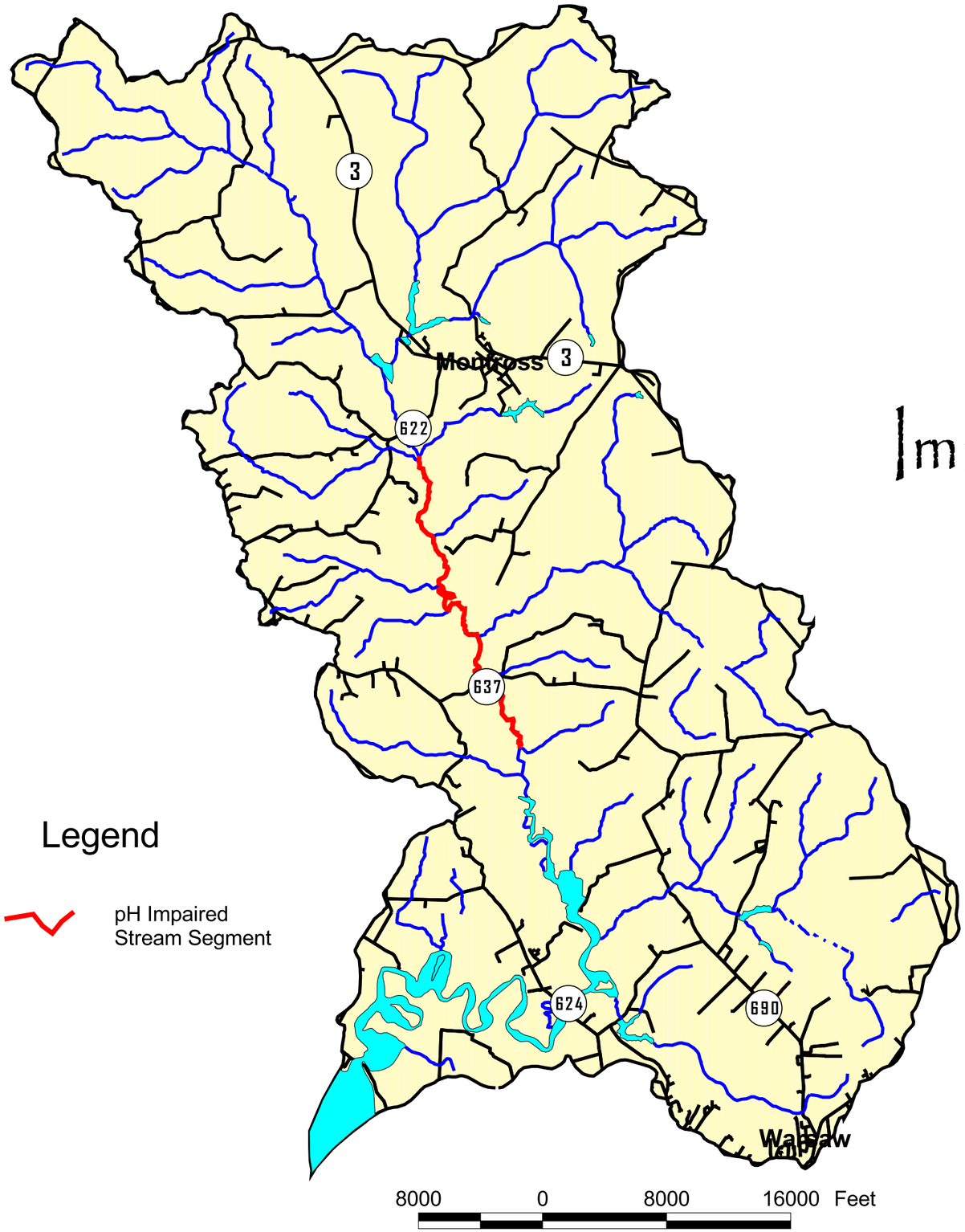
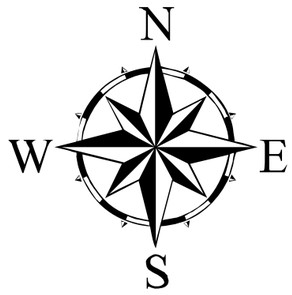
Map 13

Cat Point Creek Watershed Management Plan

Environmental Maps:

Impaired Waters: 303(d) Waters





Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Impaired Waters: Virginia Department of Environmental Quality, 2002 303(D) Impaired Waters Report to EPA.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.

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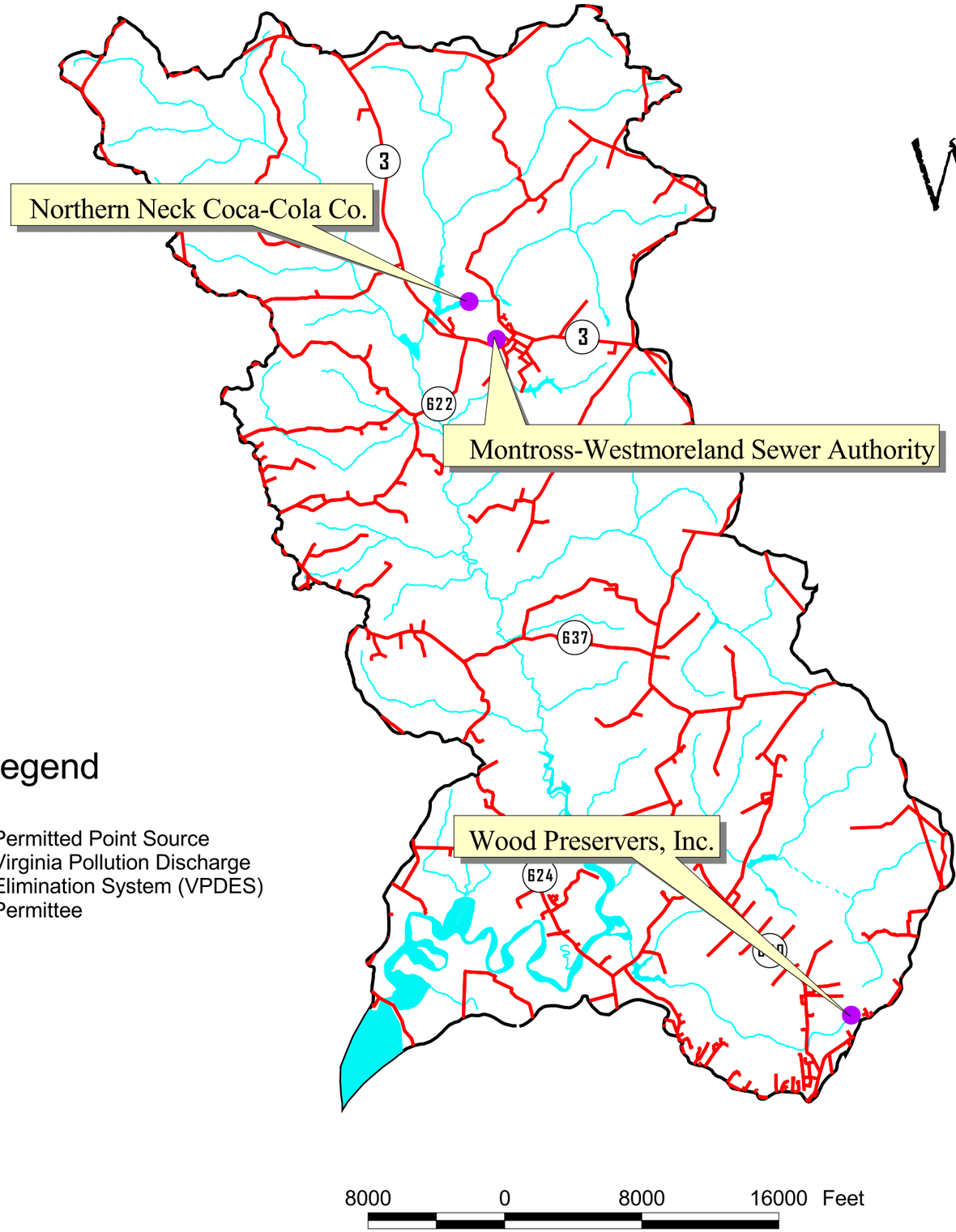
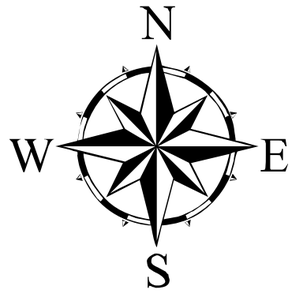
Cat Point Creek Watershed Management Plan Environmental Maps: Permitted Point Sources of Pollution



Legend

- Permitted Point Source Virginia Pollution Discharge Elimination System (VPDES) Permittee



Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: VPDES Points: Virginia Department of Health, Source Water Assessment Program (SWAP) Data, 2000.
Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Major Streams: USGS 1:100,000 Hydrography converted from original DLG Format.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.

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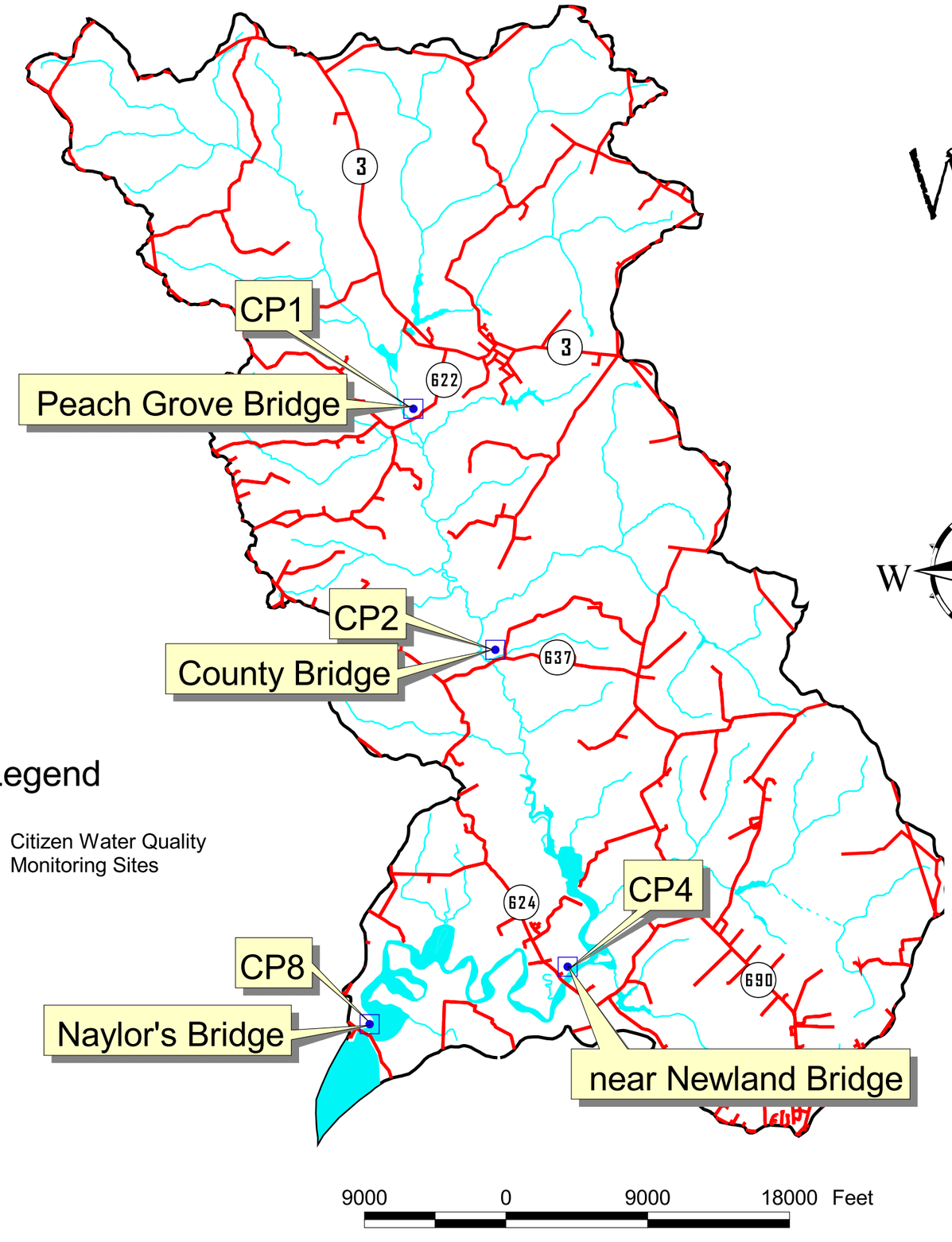
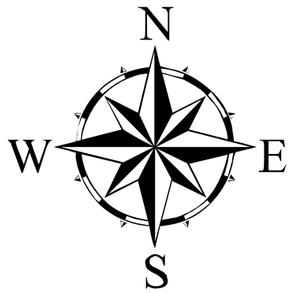
Map 15

Cat Point Creek Watershed Management Plan Environmental Maps: Citizen Water Quality Monitoring Sites





Map prepared by the Northern Neck Planning District Commission, March 2004.
Data Sources: Citizen Water Quality Monitoring Sites: Tidewater Resource Conservation and Development Council, 2003.
Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Major Streams: USGS 1:100,000 Hydrography converted from orginal DLG Format.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.

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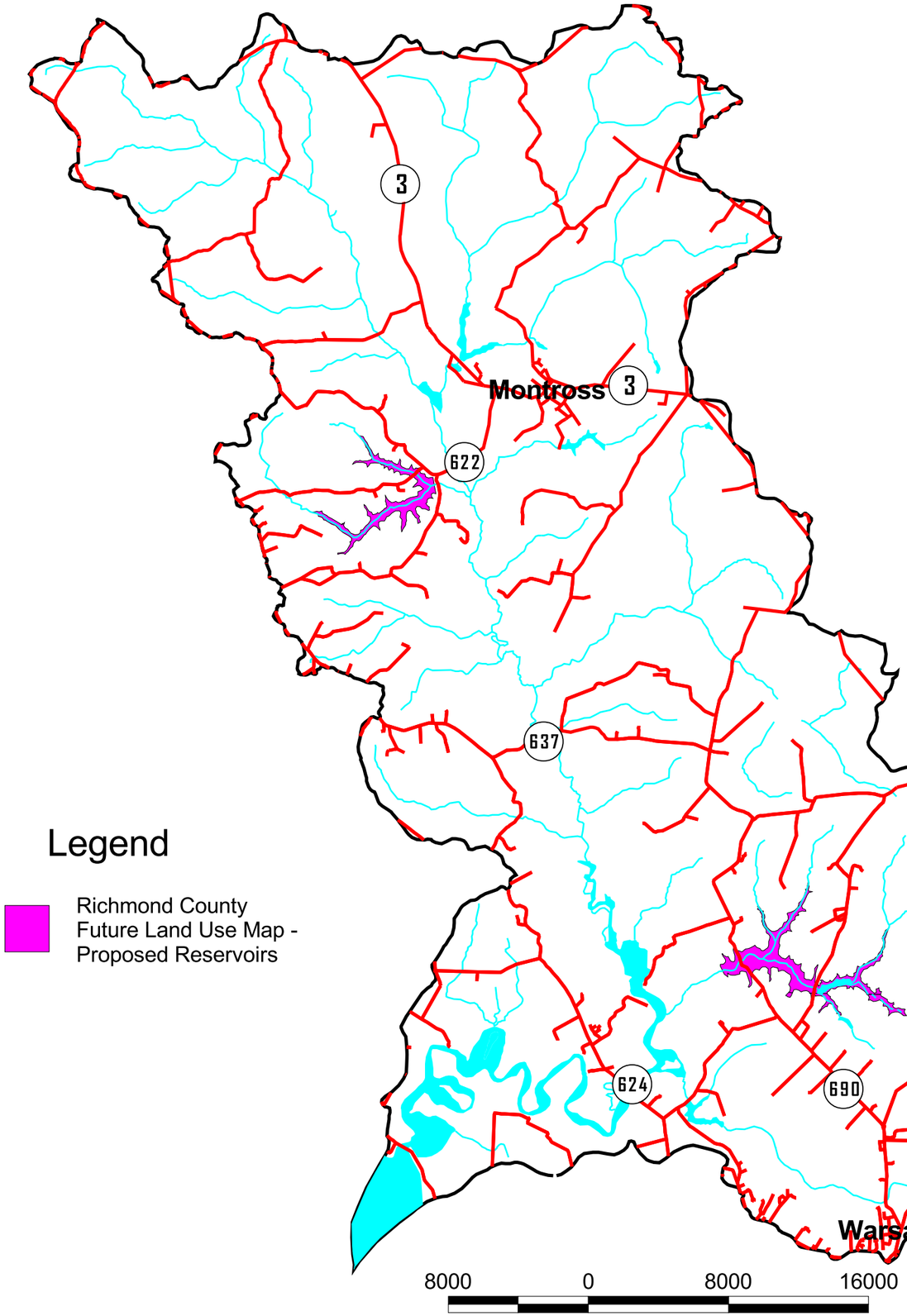
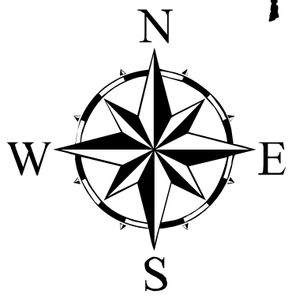
Map 16

Cat Point Creek Watershed Management Plan Environmental Maps: Proposed Reservoirs



Legend

Richmond County Future Land Use Map - Proposed Reservoirs



Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Proposed Reservoirs: Richmond County Comprehensive Plan- Future Land Use Plan Map, adopted on March 20, 2001.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.

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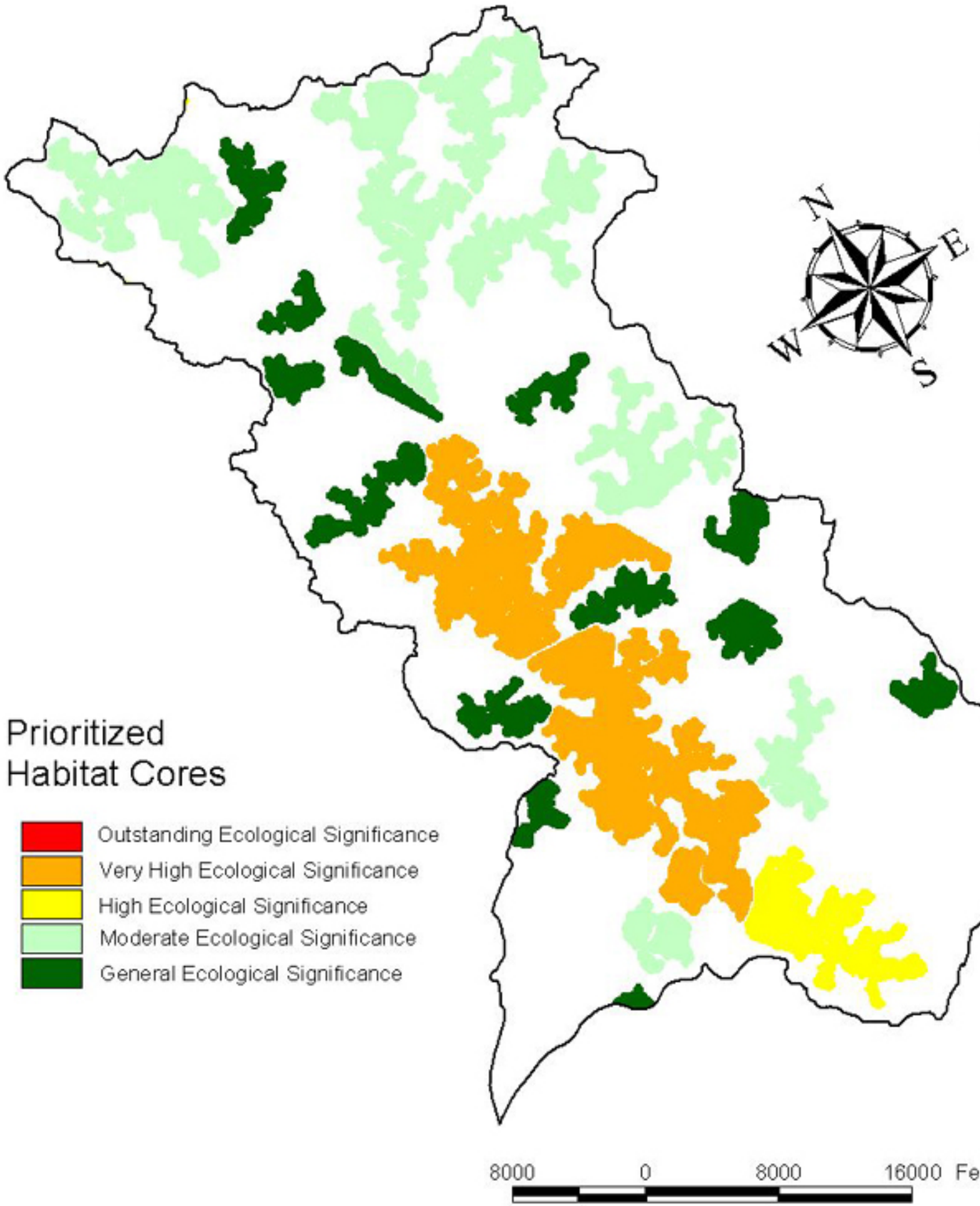
Map 17

Cat Point Creek Watershed Management Plan Environmental Maps: Major Natural Habitats

(Virginia Conservation Lands Needs Assessment)



Map prepared by the Northern Neck Planning District Commission, March 2004.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Habitat Areas: Department of Conservation and Recreation- Division of Natural Heritage, Virginia Conservation Lands Needs Assessment (VCLNA), funded by the Virginia Coasta Program and VA DCR-DNH.

This map was funded by the Environmental Protection Agency's Chesapeake Bay Program through the Virginia Department of Conservation and Recreation, via grant agreement number BAY-2002-22-SR.

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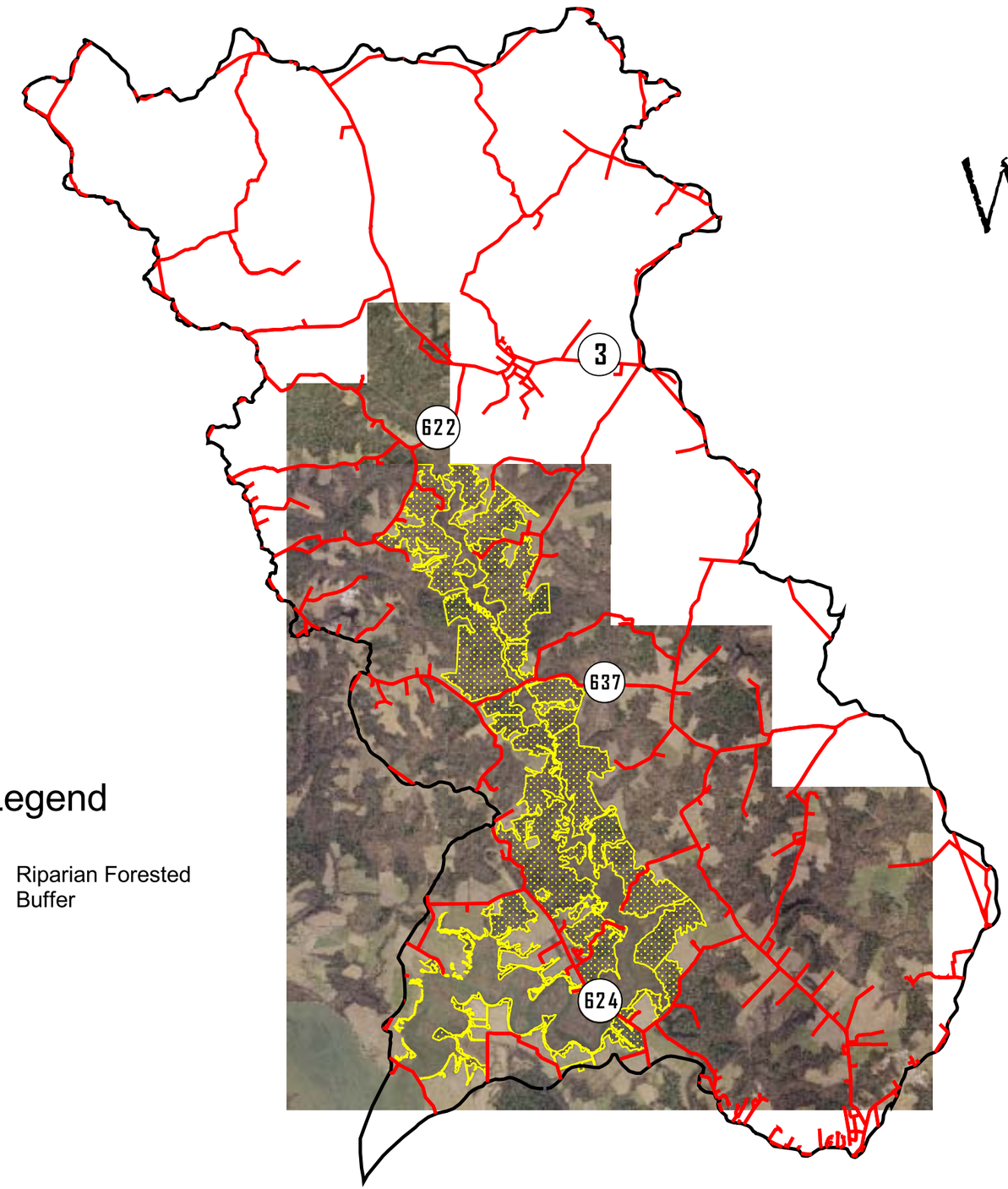
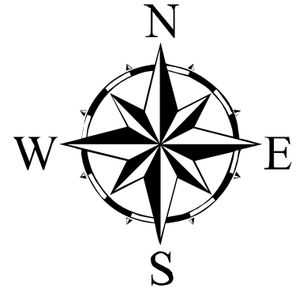
Cat Point Creek Watershed Management Plan Environmental Maps: Riparian Forested Buffers



Legend

Riparian Forested Buffer



Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.
Aerial Photographs: Virginia Base Mapping Program, copyright Commonwealth of Virginia.
Riparian Forested Buffers: Digitized by NNPDC, 2004.

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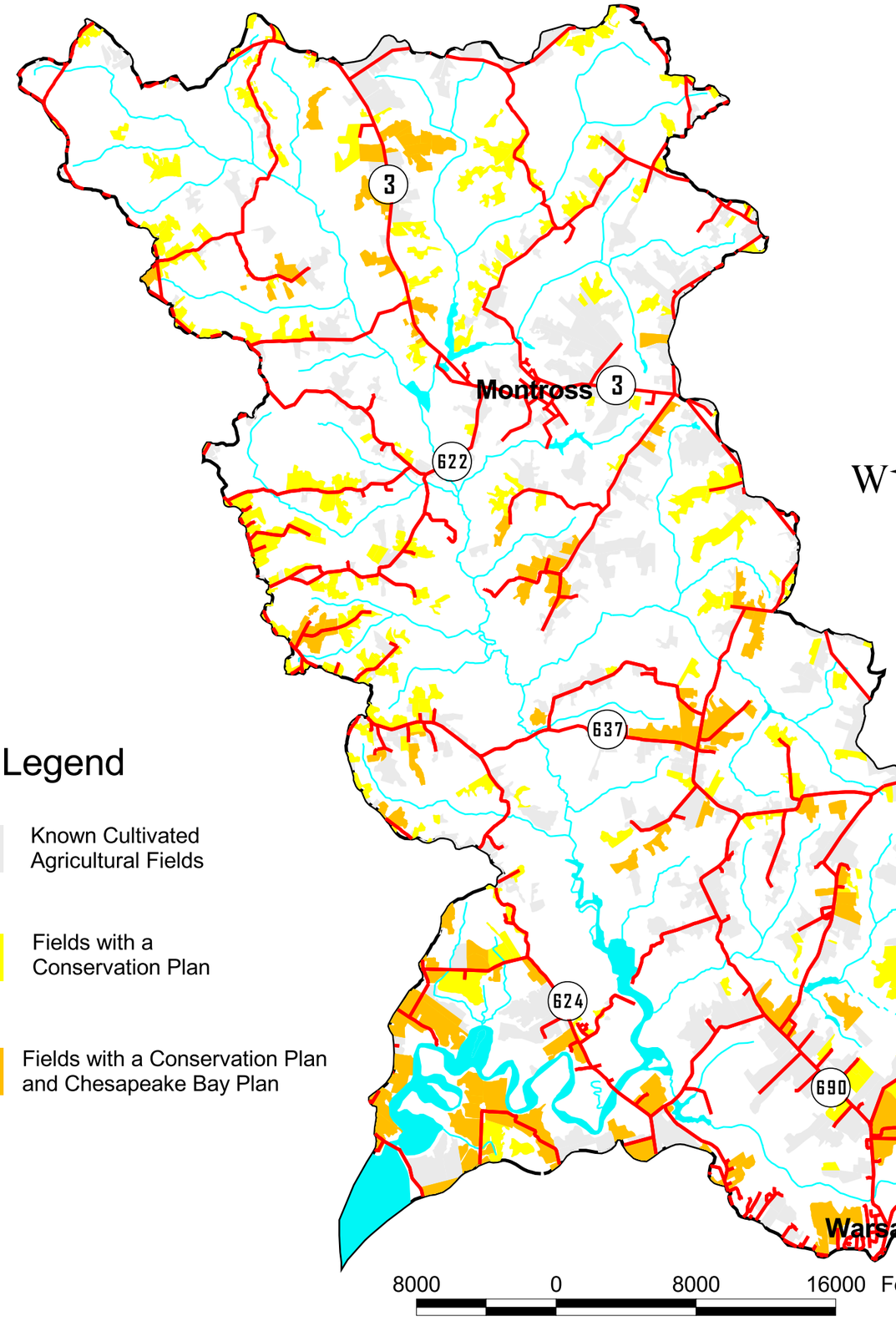
Map 19

Cat Point Creek Watershed Management Plan

Environmental Maps: Status of Agricultural Conservation Planning



Legend

- Known Cultivated Agricultural Fields
- Fields with a Conservation Plan
- Fields with a Conservation Plan and Chesapeake Bay Plan

Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Farm Field & Conservation Plans: Digitized from NRCS NAPP aerial photos, Westmoreland and Richmond Counties, Farm Plan data entered from NRCS and NNSWCD files. 2000.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.

This map was funded by the Environmental Protection Agency's Chesapeake Bay Program through the Virginia Department of Conservation and Recreation, via grant agreement number BAY-2002-22-SR.

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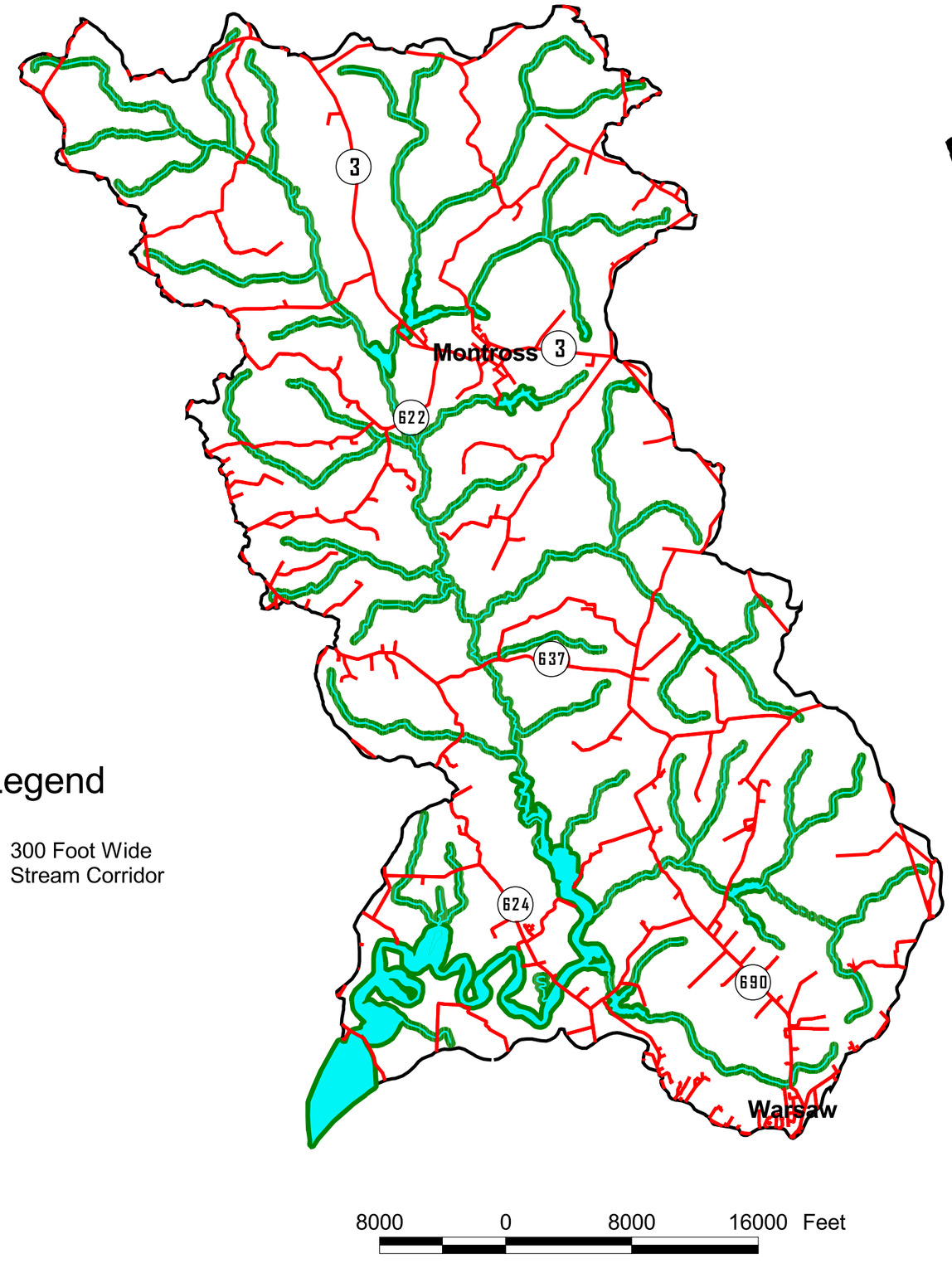
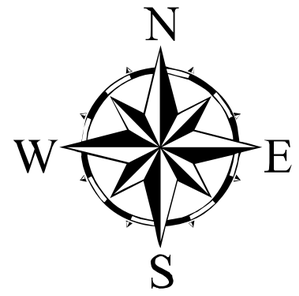
Map 20

Cat Point Creek Watershed Management Plan Environmental Maps: Major Stream Corridors





Map prepared by the Northern Neck Planning District Commission, May 2003.
Data Sources: Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Major Streams: USGS 1:100,000 Hydrography converted from original DLG Format.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.

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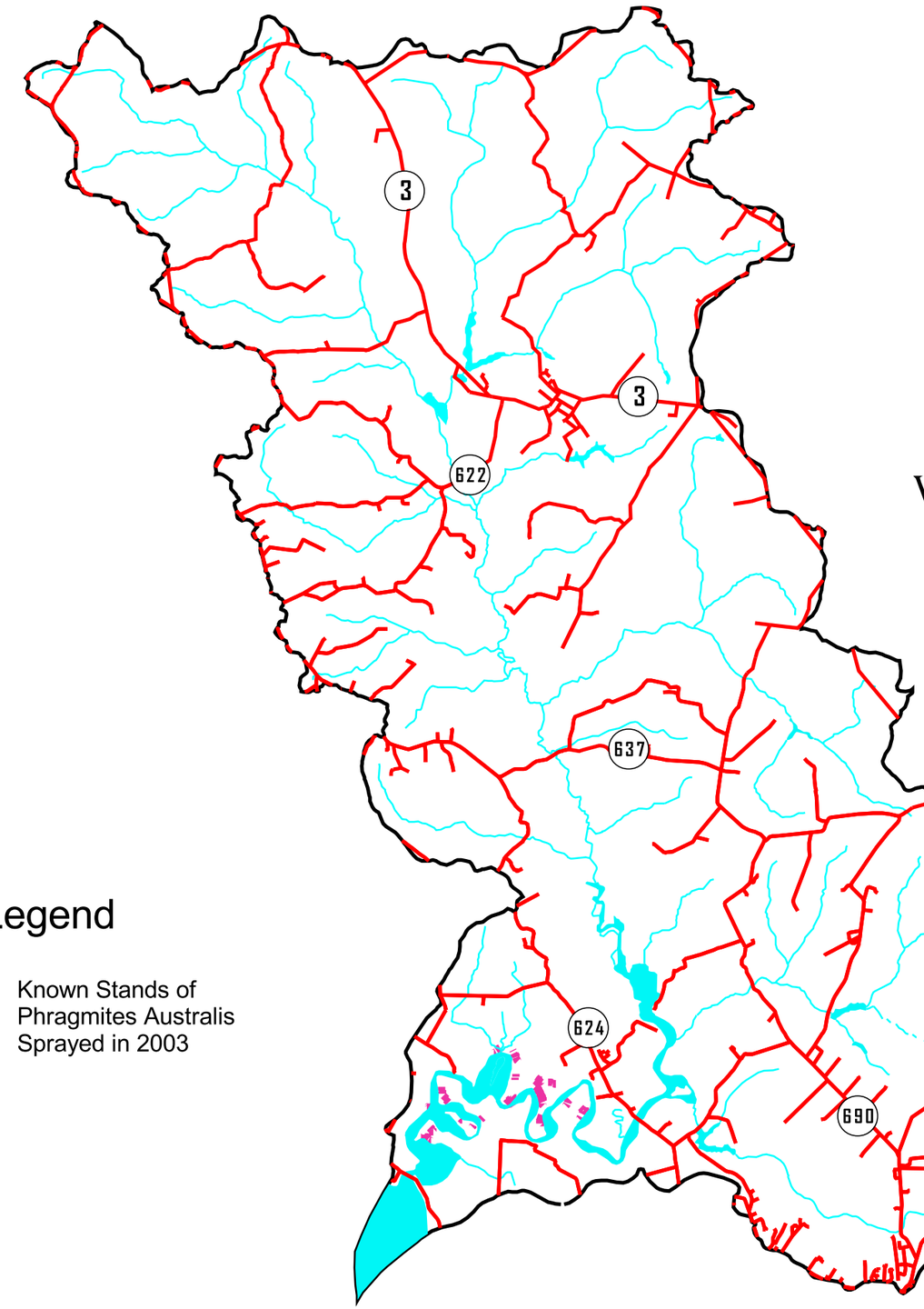
Map 21

Cat Point Creek Watershed Management Plan Environmental Maps: Known Occurences of Phragmites Australis



Legend

Known Stands of Phragmites Australis Sprayed in 2003

Map prepared by the Northern Neck Planning District Commission, March 2004.
Data Sources: Phragmites Stands: USF&W Rappahannock River Wildlife Refuge, Tayloe Unit, 2003.
Watershed: Virginia revised Hydrologic Units (E23), Virginia Department of Conservation and Recreation, 1996.
Major Streams: USGS 1:100,000 Hydrography converted from orginal DLG Format.
Roads: digitized from USGS 1:24,000 USGS Topographic Maps; VirGIS Project, (funded by the Virginia Department of Conservation and Recreation, Division of Soil and Water), 1994.
This map was funded by the Environmental Protection Agency's Chesapeake Bay Program through the Virginia Department of Conservation and Recreation, via grant agreement number BAY-2--2-22-SR.

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APPENDIX B

Disclaimer: This species list is derived from several sources. The Virginia Wildlife Information Service database for the Rappahannock River/Catpoint Creek VaNRCS hydrological unit served as the primary template. Added to this list are confirmed sightings and additional species recorded by the Rappahannock River Valley National Wildlife Refuge staff and associates from various biological surveys. Numerous other species and taxa expected to occur in this hydrological unit are not listed as no record known to the author was available.

FWIE Confirmed Sight	Code	Status	Refuge Conf'd Sight	Group	Common Name	Scientific Name	Databases	Notes
Yes	40093	FT	Yes	bird	Eagle, bald	Haliaeetus leucocephalus leucocephalus	COLLECTIONS,BOVA	
Yes	200017	FT	Yes	plant	Sensitive joint-vetch	Aeschynomene virginica	COLLECTIONS	
	30067	FS		reptile	Terrapin, northern diamondback	Malaclemys terrapin terrapin	BOVA	
	40110	FS		bird	Rail, black	Laterallus jamaicensis	BOVA	
	40320	FS	Yes	bird	Warbler, cerulean	Dendroica cerulea	BOVA	
	40129	ST		bird	Sandpiper, upland	Bartramia longicauda	BOVA	
	10032	SS		fish	Sturgeon, Atlantic	Acipenser oxyrhynchus	BOVA	
	40264	SS	Yes	bird	Creeper, brown	Certhia americana	BOVA	
	40364	SS	Yes	bird	Dickcissel	Spiza americana	BOVA	
	40032	SS	Yes	bird	Egret, great	Ardea alba egretta	BOVA	
	40366	SS	Yes	bird	Finch, purple	Carpodacus purpureus	BOVA	
	40094	SS	Yes	bird	Harrier, northern	Circus cyaneus	BOVA	
	40029	SS		bird	Heron, little blue	Egretta caerulea caerulea	BOVA	
	40034	SS		bird	Heron, tricolored	Egretta tricolor	BOVA	
	40285	SS	Yes	bird	Kinglet, golden-crowned	Regulus satrapa	BOVA	
	40112	SS	Yes	bird	Moorhen, common	Gallinula chloropus cachinnans	BOVA	
	40036	SS	Yes	bird	Night-heron, yellow-crowned	Nyctanassa violacea violacea	BOVA	
	40262	SS	Yes	bird	Nuthatch, red-breasted	Sitta canadensis	BOVA	
	40204	SS	Yes	bird	Owl, barn	Tyto alba pratincola	BOVA	
	40180	SS	Yes	bird	Tern, Forster's	Sterna forsteri	BOVA	
	40186	SS		bird	Tern, least	Sterna antillarum	BOVA	
	40278	SS	Yes	bird	Thrush, hermit	Catharus guttatus	BOVA	
	40314	SS	Yes	bird	Warbler, magnolia	Dendroica magnolia	BOVA	
	40270	SS		bird	Wren, sedge	Cistothorus platensis	BOVA	
	40266	SS	Yes	bird	Wren, winter	Troglodytes troglodytes	BOVA	
	50045	SS	Yes	mammal	Otter, river	Lontra canadensis lataxina	BOVA	
Yes	10038		Yes	fish	Alewife	Alosa pseudoharengus	COLLECTIONS,BOVA	
Yes	10188		Yes	fish	Bass, largemouth	Micropterus salmoides	COLLECTIONS,BOVA	
	10186			fish	Bass, smallmouth	Micropterus dolomieu	BOVA	
Yes	10168			fish	Bass, striped	Morone saxatilis	COLLECTIONS,BOVA	
Yes	10183		Yes	fish	Bluegill	Lepomis macrochirus	COLLECTIONS,BOVA	
	10123			fish	Bullhead, brown	Ameiurus nebulosus	BOVA	
Yes	10122		Yes	fish	Bullhead, yellow	Ameiurus natalis	COLLECTIONS,BOVA	
	10062			fish	Carp, common	Cyprinus carpio	BOVA	
Yes	10125			fish	Catfish, channel	Ictalurus punctatus	COLLECTIONS,BOVA	
Yes	10120			fish	Catfish, white	Ameiurus catus	COLLECTIONS,BOVA	
Yes	10106			fish	Chubsucker, creek	Erimyzon oblongus	COLLECTIONS,BOVA	
	10190			fish	Crappie, black	Pomoxis nigromaculatus	BOVA	

	A	B	C	D	E	F	G	H	I
7	**FWIE Confirmed Sight**	**Code**	**Status**	**Refuge Conf'd Sight**	**Group**	**Common Name**	**Scientific Name**	**Databases**	**Notes**
46	Yes	10101			fish	Dace, blacknose	Rhinichthys atratulus	COLLECTIONS,BOVA	
47	Yes	10397			fish	Darter, tessellated	Etheostoma olmstedi	COLLECTIONS,BOVA	
48	Yes	10131		Yes	fish	Eel, American	Anguilla rostrata	COLLECTIONS	
49		10104			fish	Fallfish	Semotilus corporalis	BOVA	
50		10176		Yes	fish	Flier	Centrarchus macropterus	COLLECTIONS	
51		10045			fish	Herring, blueback	Alosa aestivalis	BOVA	
52		10143			fish	Killifish, banded	Fundulus diaphanus	BOVA	
53		10129			fish	Madtom, margined	Noturus insignis	BOVA	
54	Yes	10128			fish	Madtom, tadpole	Noturus gyrinus	COLLECTIONS,BOVA	
55	Yes	10043			fish	Menhaden, Atlantic	Brevoortia tyrannus	COLLECTIONS	
56		10408			fish	Minnow, eastern silvery	Hybognathus regius	BOVA	
57		10148			fish	Mosquitofish, eastern	Gambusia holbrooki	BOVA	
58		10054			fish	Mudminnow, eastern	Umbra pygmaea	BOVA	
59	Yes	10163			fish	Perch, pirate	Aphredoderus sayanus sayanus	COLLECTIONS,BOVA	
60	Yes	10166			fish	Perch, white	Morone americana	COLLECTIONS,BOVA	
61		10206			fish	Perch, yellow	Perca flavescens	BOVA	
62		10056			fish	Pickerel, chain	Esox niger	BOVA	
63	Yes	10055			fish	Pickerel, redfin	Esox americanus americanus	COLLECTIONS,BOVA	
64	Yes	10182			fish	Pumpkinseed	Lepomis gibbosus	COLLECTIONS,BOVA	
65	Yes	10040			fish	Shad, American	Alosa sapidissima	BOVA	
66		10041			fish	Shad, gizzard	Dorosoma cepedianum	BOVA	
67		10039			fish	Shad, hickory	Alosa mediocris	BOVA	
68		10080			fish	Shiner, common	Luxilus cornutus	BOVA	
69	Yes	10068			fish	Shiner, golden	Notemigonus crysoleucas	COLLECTIONS,BOVA	
70		10375			fish	Shiner, ironcolor	Notropis chalybaeus	BOVA	
71		10073			fish	Shiner, satinfin	Cyprinella analostamas	BOVA	
72	Yes	10082			fish	Shiner, spottail	Notropis hudsonius	COLLECTIONS,BOVA	
73		10086			fish	Shiner, swallowtail	Notropis procne	BOVA	
74		10178			fish	Sunfish, bluespotted	Enneacanthus gloriosus	BOVA	
75		10173			fish	Sunfish, mud	Acantharchus pomotis	BOVA	
76		10180			fish	Sunfish, redbreast	Lepomis auritus	BOVA	
77	Yes	10177			fish	Warmouth	Lepomis gulosus	COLLECTIONS,BOVA	
78		20004		Yes	amphibian	Bullfrog	Rana catesbeiana	BOVA	
79		20003			amphibian	Frog, Brimley's chorus	Pseudacris brimleyi	BOVA	
80		20012		Yes	amphibian	Frog, eastern cricket	Acris crepitans crepitans	BOVA	
81		20013		Yes	amphibian	Frog, pickerel	Rana palustris	BOVA	
82		20018		Yes	amphibian	Frog, southeastern chorus	Pseudacris feriarum	BOVA	
83		20008		Yes	amphibian	Frog, southern green	Rana clamitans melanota	BOVA	
84		20016		Yes	amphibian	Frog, southern leopard	Rana sphenocephala utricularius	BOVA	
85		20019		Yes	amphibian	Frog, wood	Rana sylvatica	BOVA	
86		20065		Yes	amphibian	Newt, red-spotted	Notophthalmus viridescens viridescens	BOVA	
87		20071		Yes	amphibian	Peeper, northern spring	Pseudacris crucifer crucifer	BOVA	
88		20069			amphibian	Salamander, eastern mud	Pseudotriton montanus montanus	BOVA	
89		20029			amphibian	Salamander, four-toed	Hemidactylium scutatum	BOVA	

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7	**FWIE Confirmed Sight**	**Code**	**Status**	**Refuge Conf'd Sight**	**Group**	**Common Name**	**Scientific Name**	**Databases**	**Notes**
90	sight	20035		Yes	amphibian	Salamander, marbled	Ambystoma opacum	BOVA	
91		20038			amphibian	Salamander, northern dusky	Desmognathus fuscus	BOVA	
92		20070			amphibian	Salamander, northern red	Pseudotriton ruber ruber	BOVA	
93		20043			amphibian	Salamander, northern redback	Plethodon cinereus	BOVA	
94		20050			amphibian	Salamander, southern two-lined	Eurycea cirrigera	BOVA	
95		20049		Yes	amphibian	Salamander, spotted	Ambystoma maculatum	BOVA	
96		20051			amphibian	Salamander, three-lined	Eurycea longicauda guttolineata	BOVA	
97		20080			amphibian	Salamander, white-spotted slimy	Plethodon cylindraceus	BOVA	
98		20058			amphibian	Siren, greater	Siren lacertina	BOVA	
99		20061		Yes	amphibian	Spadefoot, eastern	Scaphiopus holbrooki	BOVA	
100		20059		Yes	amphibian	Toad, American	Bufo americanus	BOVA	
101		20062		Yes	amphibian	Toad, Fowler's	Bufo fowleri	BOVA	
102		20060		Yes	amphibian	Toad, eastern narrow-mouthed	Gastrophryne carolinensis	BOVA	
103		20006		Yes	amphibian	Treefrog, Cope's gray	Hyla chrysoscelis	BOVA	
104		20009		Yes	amphibian	Treefrog, green	Hyla cinerea	BOVA	
105		30016		Yes	reptile	Copperhead, northern	Agkistrodon contortrix mokason	BOVA	
106		30030			reptile	Kingsnake, black	Lampropeltis getula nigra	BOVA	
107		30026		Yes	reptile	Kingsnake, eastern	Lampropeltis getula getula	BOVA	
108		30027			reptile	Kingsnake, mole	Lampropeltis calligaster rhombomaculata	BOVA	
109		30031			reptile	Kingsnake, scarlet	Lampropeltis triangulum elapsoides	BOVA	
110		30002		Yes	reptile	Lizard, northern fence	Sceloporus undulatus hyacinthinus	BOVA	
111		30018		Yes	reptile	Racer, northern black	Coluber constrictor constrictor	BOVA	
112		30008			reptile	Racerunner, six-lined	Cnemidophorous sexlineatus sexlineatus	BOVA	
113		30006			reptile	Skink, broadhead	Eumeces laticeps	BOVA	
114		30004		Yes	reptile	Skink, five-lined	Eumeces fasciatus	BOVA	
115		30007			reptile	Skink, ground	Scincella lateralis	BOVA	
116		30005			reptile	Skink, southeastern five-lined	Eumeces inexpectatus	BOVA	
117		30023		Yes	reptile	Snake, black rat	Elaphe obsoleta obsoleta	BOVA	
118		30022			reptile	Snake, corn	Elaphe guttata	BOVA	
119		30049		Yes	reptile	Snake, eastern earth	Virginia valeriae valeriae	BOVA	
120		30044		Yes	reptile	Snake, eastern garter	Thamnophis sirtalis sirtalis	BOVA	
121		30024		Yes	reptile	Snake, eastern hognose	Heterodon platirhinos	BOVA	
122		30029			reptile	Snake, eastern milk	Lampropeltis triangulum triangulum	BOVA	
123		30045			reptile	Snake, eastern ribbon	Thamnophis sauritus sauritus	BOVA	
124		30019			reptile	Snake, eastern worm	Carphophis amoenus amoenus	BOVA	
125		30041			reptile	Snake, northern brown	Storeria dekayi dekayi	BOVA	
126		30042			reptile	Snake, northern redbelly	Storeria occipitomaculata occipitomaculata	BOVA	
127		30020			reptile	Snake, northern ringneck	Diadophis punctatus edwardsii	BOVA	
128		30017			reptile	Snake, northern scarlet	Cemophora coccinea copei	BOVA	
129		30034		Yes	reptile	Snake, northern water	Nerodia sipedon sipedon	BOVA	
130		30046			reptile	Snake, rainbow	Farancia erytrogramma erytrogramma	BOVA	
131		30038		Yes	reptile	Snake, rough green	Opheodrys aestivus	BOVA	
132		30021			reptile	Snake, southern ringneck	Diadophis punctatus punctatus	BOVA	
133		30052			reptile	Turtle, common musk (= stinkpot)	Sternotherus odoratus	BOVA	

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134		30050		Yes	reptile	Turtle, common snapping	Chelydra serpentina serpentina	BOVA	
135		30068		Yes	reptile	Turtle, eastern box	Terrapene carolina carolina	BOVA	
136		30051		Yes	reptile	Turtle, eastern mud	Kinosternon subrubrum subrubrum	BOVA	
137		30060		Yes	reptile	Turtle, eastern painted	Chrysemys picta picta	BOVA	
138		30057		Yes	reptile	Turtle, eastern redbelly	Pseudemys rubriventris rubriventris	BOVA	
139		30063		Yes	reptile	Turtle, spotted	Clemmys guttata	BOVA	
140		30076			reptile	Turtle, striped mud	Kinosternon baurii	BOVA	
141		40038		Yes	bird	Bittern, American	Botaurus lentiginosus	BOVA	
142		40037		Yes	bird	Bittern, least	Ixobrychus exilis exilis	BOVA	
143		40346		Yes	bird	Blackbird, red-winged	Agelaius phoeniceus	BOVA	
144		40282		Yes	bird	Bluebird, eastern	Sialia sialis	BOVA	
145		40343		Yes	bird	Bobolink	Dolichonyx orizyvorus		
146		40100		Yes	bird	Bobwhite, northern	Colinus virginianus	BOVA	
147		40068		Yes	bird	Bufflehead	Bucephala albeola	BOVA	
148		40361		Yes	bird	Bunting, indigo	Passerina cyanea	BOVA	
149		40401			bird	Bunting, snow	Plectrophenax nivalis nivalis	BOVA	
150		40064		Yes	bird	Canvasback	Aythya valisineria	BOVA	
151		40357		Yes	bird	Cardinal, northern	Cardinalis cardinalis	BOVA	
152		40272		Yes	bird	Catbird, gray	Dumetella carolinensis	BOVA	
153		40337		Yes	bird	Chat, yellow-breasted	Icteria virens virens	BOVA	
154		40258		Yes	bird	Chickadee, Carolina	Poecile carolinensis	BOVA	
155		40214		Yes	bird	Chuck-will's-widow	Caprimulgus carolinensis	BOVA	
156		40024		Yes	bird	Comorant, double-crested	Phalacrocorax auritus	BOVA	
157		40113		Yes	bird	Coot, American	Fulica americana	BOVA	
158		40353		Yes	bird	Cowbird, brown-headed	Molothrus ater	BOVA	
159		40373			bird	Crossbill, white-winged	Loxia leucoptera	BOVA	
160		40255		Yes	bird	Crow, American	Corvus brachyrhynchos	BOVA	
161		40256		Yes	bird	Crow, fish	Corvus ossifragus	BOVA	
162		40203		Yes	bird	Cuckoo, black-billed	Coccyzus erythropthalmus	BOVA	
163		40202		Yes	bird	Cuckoo, yellow-billed	Coccyzus americanus	BOVA	
164		40198		Yes	bird	Dove, mourning	Zenaida macroura carolinensis	BOVA	
165		40197		Yes	bird	Dove, rock	Columba livia	BOVA	
166		40142			bird	Dowitcher, short-billed	Limnodromus griseus	BOVA	
167		40052		Yes	bird	Duck, American black	Anas rubripes	BOVA	
168		40063		Yes	bird	Duck, ring-necked	Aythya collaris	BOVA	
169		40076		Yes	bird	Duck, ruddy	Oxyura jamaicensis	BOVA	
170		40061		Yes	bird	Duck, wood	Aix sponsa	BOVA	
171		40030		Yes	bird	Egret, cattle	Bubulcus ibis	BOVA	
172		40367		Yes	bird	Finch, house	Carpodacus mexicanus	BOVA	
173		40221		Yes	bird	Flicker, northern	Colaptes auratus	BOVA	
174		40239		Yes	bird	Flycatcher, Acadian	Empidonax virescens	BOVA	
175		40234		Yes	bird	Flycatcher, great crested	Myiarchus crinitus	BOVA	
176		40242			bird	Flycatcher, least	Empidonax minimus	BOVA	
177		40240		Yes	bird	Flycatcher, willow	Empidonax traillii	BOVA	

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178		40053		Yes	bird	Gadwall	Anas strepera	BOVA	
179		40284		Yes	bird	Gnatcatcher, blue-gray	Polioptila caerulea	BOVA	
180		40067		Yes	bird	Goldeneye, common	Bucephala clangula americana	BOVA	
181		40371		Yes	bird	Goldfinch, American	Carduelis tristis	BOVA	
182		40045		Yes	bird	Goose, Canada	Branta canadensis	BOVA	
183		40049			bird	Goose, lesser snow	Chen caerulescens caerulescens	BOVA	
184		40410			bird	Goose, snow	Chen caerulescens atlanticus	BOVA	
185		40351			bird	Grackle, boat-tailed	Quiscalus major	BOVA	
186		40352		Yes	bird	Grackle, common	Quiscalus quiscula	BOVA	
187		40008		Yes	bird	Grebe, pied-billed	Podilymbus podiceps	BOVA	
188		40360		Yes	bird	Grosbeak, blue	Guiraca caerulea caerulea	BOVA	
189		40365			bird	Grosbeak, evening	Coccothraustes vespertinus	BOVA	
190		40358		Yes	bird	Grosbeak, rose-breasted	Pheucticus ludovicianus	BOVA	
191		40165		Yes	bird	Gull, great black-backed	Larus marinus	BOVA	
192		40167		Yes	bird	Gull, herring	Larus argentatus	BOVA	
193		40173		Yes	bird	Gull, laughing	Larus atricilla	BOVA	
194		40170		Yes	bird	Gull, ring-billed	Larus delawarensis	BOVA	
195		40086		Yes	bird	Hawk, Cooper's	Accipiter cooperii	BOVA	
196		40089		Yes	bird	Hawk, broad-winged	Buteo platypterus	BOVA	
197		40088		Yes	bird	Hawk, red-shouldered	Buteo lineatus lineatus	BOVA	
198		40087		Yes	bird	Hawk, red-tailed	Buteo jamaicensis	BOVA	
199		40090			bird	Hawk, rough-legged	Buteo lagopus johannis	BOVA	
200		40085		Yes	bird	Hawk, sharp-shinned	Accipiter striatus velox	BOVA	
201		40027		Yes	bird	Heron, great blue	Ardea herodias herodias	BOVA	
202		40028		Yes	bird	Heron, green	Butorides virescens	BOVA	
203		40218		Yes	bird	Hummingbird, ruby-throated	Archilochus colubris	BOVA	
204		40252		Yes	bird	Jay, blue	Cyanocitta cristata	BOVA	
205		40387		Yes	bird	Junco, dark-eyed	Junco hyemalis	BOVA	
206		40098		Yes	bird	Kestrel, American	Falco sparverius sparverius	BOVA	
207		40119		Yes	bird	Killdeer	Charadrius vociferus	BOVA	
208		40229		Yes	bird	Kingbird, eastern	Tyrannus tyrannus	BOVA	
209		40220		Yes	bird	Kingfisher, belted	Ceryle alcyon	BOVA	
210		40286		Yes	bird	Kinglet, ruby-crowned	Regulus calendula	BOVA	
211		40245		Yes	bird	Lark, horned	Eremophila alpestris	BOVA	
212		40051		Yes	bird	Mallard	Anas platyrhynchos	BOVA	
213		40251		Yes	bird	Martin, purple	Progne subis	BOVA	
214		40344		Yes	bird	Meadowlark, eastern	Sturnella magna	BOVA	
215		40078		Yes	bird	Merganser, common	Mergus merganser americanus	BOVA	
216		40077		Yes	bird	Merganser, hooded	Lophodytes cucullatus	BOVA	
217		40079		Yes	bird	Merganser, red-breasted	Mergus serrator serrator	BOVA	
218		40097		Yes	bird	Merlin	Falco columbarius		
219		40271		Yes	bird	Mockingbird, northern	Mimus polyglottos	BOVA	
220		40216		Yes	bird	Nighthawk, common	Chordeiles minor	BOVA	
221				yes	bird	Night-heron, black crowned			

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222		40263			bird	Nuthatch, brown-headed	Sitta pusilla	BOVA	
223		40261		Yes	bird	Nuthatch, white-breasted	Sitta carolinensis	BOVA	
224		40069			bird	Oldsquaw (Long-tailed duck)	Clangula hyemalis	BOVA	
225		40348		Yes	bird	Oriole, Baltimore	Icterus galbula	BOVA	
226		40347		Yes	bird	Oriole, orchard	Icterus spurius	BOVA	
227		40095		Yes	bird	Osprey	Pandion haliaetus carolinensis	BOVA	
228		40330		Yes	bird	Ovenbird	Seiurus aurocapillus	BOVA	
229		40209		Yes	bird	Owl, barred	Strix varia	BOVA	
230		40206		Yes	bird	Owl, great horned	Bubo virginianus	BOVA	
231		40211		Yes	bird	Owl, short-eared	Asio flammeus	BOVA	
232		40312		Yes	bird	Parula, northern	Parula americana	BOVA	
233		40243		Yes	bird	Pewee, eastern wood	Contopus virens	BOVA	
234		40236		Yes	bird	Phoebe, eastern	Sayornis phoebe	BOVA	
235		40054		Yes	bird	Pintail, northern	Anas acuta acuta	BOVA	
236		40287		Yes	bird	Pipit, American	Anthus rubescens	BOVA	
237		40117		Yes	bird	Plover, semipalmated	Charadrius semipalmatus	BOVA	
238		??		Yes	bird	Rail, sora	Porzana carolina	BOVA	
239		40107		Yes	bird	Rail, Virginia	Rallus limicola	BOVA	
240		40105		Yes	bird	Rail, king	Rallus elegans	BOVA	
241		40062		Yes	bird	Redhead	Aythya americana	BOVA	
242		40341		Yes	bird	Redstart, American	Setophaga ruticilla	BOVA	
243		40275		Yes	bird	Robin, American	Turdus migratorius	BOVA	
244		40149		Yes	bird	Sandpiper, least	Calidris minutilla	BOVA	
245		40134		Yes	bird	Sandpiper, spotted	Actitis macularia	BOVA	
246		40225		Yes	bird	Sapsucker, yellow-bellied	Sphyrapicus varius	BOVA	
247		40065		Yes	bird	Scaup, greater	Aythya marila	BOVA	
248		40066		Yes	bird	Scaup, lesser	Aythya affinis	BOVA	
249		40205		Yes	bird	Screech-owl, eastern	Otus asio	BOVA	
250		40370		Yes	bird	Siskin, pine	Carduelis pinus	BOVA	
251		40141		Yes	bird	Snipe, common	Gallinago gallinago	BOVA	
252		40388		Yes	bird	Sparrow, American tree	Spizella arborea		
253		40389		Yes	bird	Sparrow, chipping	Spizella passerina	BOVA	
254		40391		Yes	bird	Sparrow, field	Spizella pusilla	BOVA	
255		40395		Yes	bird	Sparrow, fox	Passerella iliaca	BOVA	
256		40378		Yes	bird	Sparrow, grasshopper	Ammodramus savannarum pratensis	BOVA	
257		40342		Yes	bird	Sparrow, house	Passer domesticus	BOVA	
258		40377		Yes	bird	Sparrow, savannah	Passerculus sandwichensis	BOVA	
259		40398		Yes	bird	Sparrow, song	Melospiza melodia	BOVA	
260		40397		Yes	bird	Sparrow, swamp	Melospiza georgiana	BOVA	
261		40383		Yes	bird	Sparrow, vesper	Pooecetes gramineus	BOVA	
262		40393		Yes	bird	Sparrow, white-crowned	Zonotrichia leucophrys	BOVA	
263		40394		Yes	bird	Sparrow, white-throated	Zonotrichia albicollis	BOVA	
264		40294		Yes	bird	Starling, European	Sturnus vulgaris	BOVA	
265		40247		Yes	bird	Swallow, bank	Riparia riparia	BOVA	

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266	sight	40249		Yes	bird	Swallow, barn	Hirundo rustica	BOVA	
267		40250		Yes	bird	Swallow, cliff	Petrochelidon pyrrhonota	BOVA	
268	sight	40248		Yes	bird	Swallow, northern rough-winged	Stelgidopteryx serripennis	BOVA	
269	sight	40246		Yes	bird	Swallow, tree	Tachycineta bicolor	BOVA	
270		40044		Yes	bird	Swan, tundra	Cygnus columbianus columbianus	BOVA	
271		40217		Yes	bird	Swift, chimney	Chaetura pelagica	BOVA	
272		40355		Yes	bird	Tanager, scarlet	Piranga olivacea	BOVA	
273		40356		Yes	bird	Tanager, summer	Piranga rubra	BOVA	
274		40056		Yes	bird	Teal, green-winged	Anas crecca carolinensis	BOVA	
275		40189		Yes	bird	Tern, caspian	Sterna caspia	BOVA	
276		40181		Yes	bird	Tern, common	Sterna hirundo	BOVA	
277		40187		Yes	bird	Tern, royal	Sterna maxima maximus	BOVA	
278		40273		Yes	bird	Thrasher, brown	Toxostoma rufum	BOVA	
279		40279			bird	Thrush, Swainson's	Catharus ustulatus	BOVA	
280		40277		Yes	bird	Thrush, wood	Hylocichla mustelina	BOVA	
281		40260		Yes	bird	Titmouse, tufted	Baeolophus bicolor	BOVA	
282		40375		Yes	bird	Towhee, eastern	Pipilo erythrophthalmus	BOVA	
283		40102		Yes	bird	Turkey, wild	Meleagris gallopavo silvestris	BOVA	
284		40298		Yes	bird	Vireo, blue-headed	Vireo solitarius	BOVA	
285		40299		Yes	bird	Vireo, red-eyed	Vireo olivaceus	BOVA	
286		40301			bird	Vireo, warbling	Vireo gilvus gilvus	BOVA	
287		40295		Yes	bird	Vireo, white-eyed	Vireo griseus	BOVA	
288		40297		Yes	bird	Vireo, yellow-throated	Vireo flavifrons	BOVA	
289		40081		Yes	bird	Vulture, black	Coragyps atratus	BOVA	
290		40080		Yes	bird	Vulture, turkey	Cathartes aura	BOVA	
291		40302		Yes	bird	Warbler, black-and-white	Mniotilta varia	BOVA	
292		40316		Yes	bird	Warbler, black-throated blue	Dendroica caerulescens	BOVA	
293		40319		Yes	bird	Warbler, black-throated green	Dendroica virens	BOVA	
294		40321		Yes	bird	Warbler, blackburnian	Dendroica fusca	BOVA	
295		40325		Yes	bird	Warbler, blackpoll	Dendroica striata	BOVA	
296		40323		Yes	bird	Warbler, chestnut-sided	Dendroica pensylvanica	BOVA	
297		40338		Yes	bird	Warbler, hooded	Wilsonia citrina	BOVA	
298		40333		Yes	bird	Warbler, Kentucky	Oporornis formosus	BOVA	
299		40329		Yes	bird	Warbler, palm	Dendroica palmarum	BOVA	
300		40326		Yes	bird	Warbler, pine	Dendroica pinus	BOVA	
301		40328		Yes	bird	Warbler, prairie	Dendroica discolor	BOVA	
302		40303		Yes	bird	Warbler, prothonotary	Protonotaria citrea	BOVA	
303		40309		Yes	bird	Warbler, Tennessee	Vermivora peregrina	BOVA	
304		40305		Yes	bird	Warbler, worm-eating	Helmitheros vermivorus	BOVA	
305		40317		Yes	bird	Warbler, yellow-rumped	Dendroica coronata cornata	BOVA	
306		40322		Yes	bird	Warbler, yellow-throated	Dendroica dominica	BOVA	
307		40313		Yes	bird	Warbler, yellow	Dendroica petechia	BOVA	
308		40332		Yes	bird	Waterthrush, Louisiana	Seiurus motacilla	BOVA	
309		40290		Yes	bird	Waxwing, cedar	Bombycilla cedrorum	BOVA	

	A	B	C	D	E	F	G	H	I
7	**FWIE Confirmed Sight**	**Code**	**Status**	**Refuge Conf'd Sight**	**Group**	**Common Name**	**Scientific Name**	**Databases**	**Notes**
310		40215		Yes	bird	Whip-poor-will	Caprimulgus vociferus	BOVA	
311		40059		Yes	bird	Wigeon, American	Anas americana	BOVA	
312		40058			bird	Wigeon, Eurasian	Anas penelope	BOVA	
313		40140		Yes	bird	Woodcock, American	Scolopax minor	BOVA	
314		40227		Yes	bird	Woodpecker, downy	Picoides pubescens medianus	BOVA	
315		40226		Yes	bird	Woodpecker, hairy	Picoides villosus	BOVA	
316	sight	40222		Yes	bird	Woodpecker, pileated	Dryocopus pileatus	BOVA	
317		40223		Yes	bird	Woodpecker, red-bellied	Melanerpes carolinus	BOVA	
318		40224		Yes	bird	Woodpecker, red-headed	Melanerpes erythrocephalus	BOVA	
319		40268		Yes	bird	Wren, Carolina	Thryothorus ludovicianus	BOVA	
320		40265		Yes	bird	Wren, house	Troglodytes aedon	BOVA	
321		40269		Yes	bird	Wren, marsh	Cistothorus palustris	BOVA	
322		40130		Yes	bird	Yellowlegs, greater	Tringa melanoleuca	BOVA	
323		40336		Yes	bird	Yellowthroat, common	Geothlypis trichas brachidactylus	BOVA	
324		50028			mammal	Bat, big brown	Eptesicus fuscus fuscus	BOVA	
325		50029		Yes	mammal	Bat, eastern red	Lasiurus borealis borealis	BOVA	
326		50033			mammal	Bat, evening	Nycticeius humeralis humeralis	BOVA	
327		50030			mammal	Bat, hoary	Lasiurus cinereus cinereus	BOVA	
328		50020		Yes	mammal	Bat, little brown	Myotis lucifugus lucifugus	BOVA	
329		50022			mammal	Bat, northern long-eared	Myotis septentrionalis septentrionalis	BOVA	
330		50025			mammal	Bat, silver-haired	Lasionycteris noctivagans	BOVA	
331	sight	50069		Yes	mammal	Beaver	Castor canadensis	BOVA	
332		50051			mammal	Bobcat	Lynx rufus rufus	BOVA	
333		50055			mammal	Chipmunk, Fisher's eastern	Tamias striatus fisheri	BOVA	
334		50103		Yes	mammal	Cottontail, eastern	Sylvilagus floridanus mallurus	BOVA	
335		50108		Yes	mammal	Deer, white-tailed	Odocoileus virginianus	BOVA	
336		50050		Yes	mammal	Fox, eastern gray	Urocyon cinereoargenteus cinereoargenteus	BOVA	
337		50049		Yes	mammal	Fox, red	Vulpes vulpes fulva	BOVA	
338		50042			mammal	Mink, common	Mustela vison mink	BOVA	
339		50017		Yes	mammal	Mole, eastern	Scalopus aquaticus aquaticus	BOVA	
340		50019		Yes	mammal	Mole, star-nosed	Condylura cristata cristata	BOVA	
341		50071		Yes	mammal	Mouse, eastern harvest	Reithrodontomys humulis virginianus	BOVA	
342		50098		Yes	mammal	Mouse, house	Mus musculus musculus	BOVA	
343		50073		Yes	mammal	Mouse, northern white-footed	Peromyscus leucopus noveboracensis	BOVA	
344		50093		Yes	mammal	Muskrat, large-toothed	Ondatra zibethicus macrodon	BOVA	
345		50001		Yes	mammal	Opossum, Virginia	Didelphis virginiana virginiana	BOVA	
346		50027			mammal	Pipistrelle, eastern	Pipistrellus subflavus subflavus	BOVA	
347		50038		Yes	mammal	Raccoon	Procyon lotor lotor	BOVA	
348		50095			mammal	Rat, Norway	Rattus norvegicus norvegicus	BOVA	
349		50078			mammal	Rat, marsh rice	Oryzomys palustris palustris	BOVA	
350		50013			mammal	Shrew, Kirtland's short-tailed	Blarina brevicauda kirtlandi	BOVA	
351		50015		Yes	mammal	Shrew, least	Cryptotis parva parva	BOVA	
352		50010			mammal	Shrew, pygmy	Sorex hoyi winnemana	BOVA	
353		50007			mammal	Shrew, southeastern	Sorex longirostris longirostris	BOVA	

	A	B	C	D	E	F	G	H	I
7	**FWIE Confirmed Sight**	**Code**	**Status**	**Refuge Conf'd Sight**	**Group**	**Common Name**	**Scientific Name**	**Databases**	**Notes**
354		50011			mammal	Shrew, southern short-tailed	Blarina carolinensis carolinensis	BOVA	
355		50047		Yes	mammal	Skunk, striped	Mephitis mephitis nigra	BOVA	
356		50058		Yes	mammal	Squirrel, northern gray	Sciurus carolinensis pennsylvanicus	BOVA	
357		50065		Yes	mammal	Squirrel, southern flying	Glaucomys volans volans	BOVA	
358		50059			mammal	Squirrel, talkative red	Tamiasciurus hudsonicus loquax	BOVA	
359		50083			mammal	Vole, dark meadow	Microtus pennsylvanicus nigrans	BOVA	
360		50082		Yes	mammal	Vole, meadow	Microtus pennsylvanicus pennsylvanicus	BOVA	
361		50091			mammal	Vole, pine	Microtus pinetorum scalapsoides	BOVA	
362		50041			mammal	Weasel, long-tailed	Mustela frenata noveboracensis	BOVA	
363		50054		Yes	mammal	Woodchuck	Marmota monax monax	BOVA	
364		60025			invertebrate	Mussel, eastern elliptio	Elliptio complanata	BOVA	
365		70102			invertebrate	Crayfish	Cambarus bartonii bartonii	BOVA	
366		70095			invertebrate	Crayfish	Cambarus diogenes diogenes	BOVA	
367		70088			invertebrate	Crayfish	Cambarus robustus	BOVA	
368		70099			invertebrate	Crayfish	Fallicambarus uhleri	BOVA	
369		70097			invertebrate	Crayfish	Orconectes immunis	BOVA	
370		70098			invertebrate	Crayfish	Orconectes limosus	BOVA	
371		100043			invertebrate	Armyworm	Pseudaletia unipuncta	BOVA	
372		100041			invertebrate	Borer, European corn	Ostrinia nubilatis	BOVA	
373		100181			invertebrate	Butterfly, Aaron's skipper	Poanes aaroni	BOVA	
374		100274			invertebrate	Butterfly, Appalachian brown	Satyrodes appalachia	BOVA	
375		100196			invertebrate	Butterfly, Brazilian skipper	Calpodes ethlius	BOVA	
376		100177			invertebrate	Butterfly, Delaware skipper	Anatrytone logan	BOVA	
377		100231			invertebrate	Butterfly, Edwards' hairstreak	Satyrium edwardsii	BOVA	
378		100145			invertebrate	Butterfly, Hayhurst's scallopwing	Staphylus hayhurstii	BOVA	
379		100179			invertebrate	Butterfly, broad-winged skipper	Poanes viator	BOVA	
380		100205		Yes	invertebrate	Butterfly, cabbage white	Pieris rapae	BOVA	
381		100167			invertebrate	Butterfly, carus skipper	Polites carus	BOVA	
382		100159			invertebrate	Butterfly, clouded skipper	Lerema accius	BOVA	
383		100094		Yes	invertebrate	Butterfly, clouded sulphur	Colias philodice	BOVA	
384		100213		Yes	invertebrate	Butterfly, cloudless sulphur	Phoebis sennae eubule	BOVA	
385		100265		Yes	invertebrate	Butterfly, common buckeye	Junonia coenia	BOVA	
386		100277		Yes	invertebrate	Butterfly, common wood-nymph	Cercyonis pegala	BOVA	
387		100168			invertebrate	Butterfly, crossline skipper	Polites origenes	BOVA	
388		100238			invertebrate	Butterfly, eastern tailed-blue	Everes comyntas	BOVA	
389		100093		Yes	invertebrate	Butterfly, eastern tiger swallowtail	Papilio glaucus	BOVA	
390		100209			invertebrate	Butterfly, falcate orangetip	Anthocharis midea	BOVA	
391		100228			invertebrate	Butterfly, gray hairstreak	Strymon melinus	BOVA	
392		100249		Yes	invertebrate	Butterfly, great spangled fritillary	Speyeria cybele	BOVA	
393		100270			invertebrate	Butterfly, hackberry emperor	Asterocampa celtis	BOVA	
394		100160			invertebrate	Butterfly, least skipper	Ancyloxypha numitor	BOVA	
395		100140			invertebrate	Butterfly, long-tailed skipper	Urbanus proteus	BOVA	
396		100079		Yes	invertebrate	Butterfly, monarch	Danaus plexippus	BOVA	
397		100211			invertebrate	Butterfly, orange sulphur	Colias eurytheme	BOVA	

	A	B	C	D	E	F	G	H	I
7	**FWIE Confirmed Sight**	**Code**	**Status**	**Refuge Conf'd Sight**	**Group**	**Common Name**	**Scientific Name**	**Databases**	**Notes**
398		100268			invertebrate	Butterfly, red-spotted purple	Limenitis arthemis astyanax	BOVA	
399		100174			invertebrate	Butterfly, sachem	Atalopedes campestris	BOVA	
400		100198			invertebrate	Butterfly, salt marsh skipper	Panoquina panoquin	BOVA	
401		100082			invertebrate	Butterfly, silver-spotted skipper	Epargyreus clarus	BOVA	
402		100142			invertebrate	Butterfly, southern cloudywing	Thorybes bathyllus	BOVA	
403		100226			invertebrate	Butterfly, southern hairstreak	Satyrium favonius	BOVA	
404		100202		Yes	invertebrate	Butterfly, spicebush swallowtail	Papilio troilus	BOVA	
405		100239		Yes	invertebrate	Butterfly, spring azure	Celastrina ladon	BOVA	
406		100158			invertebrate	Butterfly, swarthy skipper	Nastra lherminier	BOVA	
407		100269			invertebrate	Butterfly, tawny emperor	Asterocampa clyton	BOVA	
408		100266		Yes	invertebrate	Butterfly, viceroy	Limenitis archippus	BOVA	
409		100042			invertebrate	Earworm, corn	Heliathis zea	BOVA	
410		100302			invertebrate	Moth, Plebeian sphinx	Paratrea plebeja	BOVA	
411		100317		Yes	invertebrate	Moth, Virginia-creeper sphinx	Darapsa myron	BOVA	
412		100040			invertebrate	Moth, codling	Cydia pomonella	BOVA	
413		100047			invertebrate	Moth, gypsy	Lymantria dispar	BOVA	
414		110230			invertebrate	Tick, American dog	Dermacentor variabilis	BOVA	
415		110232			invertebrate	Tick, brown dog	Rhipicephalus sanguineus	BOVA	
416		110228			invertebrate	Tick, lone star	Amblyomma americanum	BOVA	
417		110231			invertebrate	Tick, rabbit	Haemaphysalis leporispalustris	BOVA	
418		110229			invertebrate	Tick, winter	Dermacentor albipictus	BOVA	

APPENDIX C

CAT POINT CREEK WATERSHED MANAGEMENT PLAN DEVELOPMENT MATRIX -2004

SUBJECT		ASSETS (What we Have)	THREATS/ISSUES	I.D.ISSUES	SOLUTIONS (How to protect)	Responsible Party	Funding sources	Completion dat
Topography								
slopes		steep slopes	sensitive landscape	erosion	promote C/S funds for Ag. & forest planning	NNSWCD, NRCS, DCR, DOF	CRP, EQIP, CREP	Ongoing
soils		sandy soils	sensitive landscape	erosion	promote C/S funds for Ag.& forest planning	NNSWCD, NRCS, DCR, DOF	CRP, EQIP, CREP	Ongoing
WQ	Surface	TMDL segment	ph high in segment	ph TMDL	test for ph, to supplement DEQ data	DEQ, Governors School	State Funds, CB Small Waterdshed Grant	2004
	Grd. Water	quality/quantity unknown	unknown	limited WQ data	seek to install additional monitoring wells	NNPDC	Drinking Water State Revolving Fund	Ongoing
	Supply	currently an adequate supply	dropping aquifer levels	grd.water data limited	create water supply demand and future needs plan	NNPDC	Virginia General Assembly	2007
Habitat		enhance protection for wildlife	development	set aside open space	extend natural corridor further north & south	NNPDC, Rich. Co. Planning Comm.	Not applicable	2007
		enhance protection for wildlife	development	set aside open space	establish natural corridors along Cat Point Creek	NNPDC, West Co. Planning Comm.	Not applicable	2006
		understand corridor benefits	lack of knowledge	public education	define benefits of natural corridor & width	DCR-DNH, DGIF	Not applicable	2007
		help link habitats together	destroy existing corr.	development	consider establishment of greenways	Northern Neck Land Conservancy	Donations, gifts, membership dues	2007
Aquatic		fresh & brackish micro-org.	NPS, PS, sediment	unknown	unknown if population is impacted	DEQ	Exsiting operating funds	2007
		fish spawning	beaverdams	shad/herring passage	pop.depends on seasons/rains/predators	CPC Steering Committee	Ches. Bay Small Watershed Grants	2005
		fish spawning	predation by catfish	shad/herring survival	monitor cond's./hold Blue Catfish Derby	CPC Steering Committee	Ches. Bay Small Watershed Grants	2007
Wetlands		mostly along lower mainstem	invasive species	phragmites	good control currently due to Rapp. Phrag. Action Comm.	Rapp. Phrag. Action Comm.	North American Waterfowl Cons. Act Gran	2010
Streams		numerous, well buffered	NPS,PS, buffer width	lower stem lacks buffers	protect existing buffers/enhance lower creek buffers	NNSWCD, NRCS, DCR	CRP, CREP	2010
Forest		well forested	forest cover	most privately owned	protect what's there/encourage hunt clubs	DOF	EPA Watershed Protection and	Ongoing
			forest activity	high	promote forestry BMPs	DOF, Tidewater RC&D	Flood Prevention Program	Ongoing
Land use:								
Rural	Ag.	supports economy,rural lifestyle	NPS, PS,	fragmentation	diversification, change inheritance laws, cons. easements	Westmoreland Ag. Preservation Comm.	USDA	Ongoing
		supports economy,rural lifestyle	NPS	land app. of bio-solids	adopt monitoring ordinance, monitor applications	Richmond and Westmoreland Counties	Biosolids Reimbursement Fund	2006
	Forests	supports economy,rural lifestyle	loss to development	fragmentation	development issues tabled/lack of information			
Urban	Montross	service center,jobs	dev.- roads, housing	run-off (montross)	encourage LID practices in town	Westmoreland Planning Office	County Funds	
	Warsaw	service center,jobs	industry, service bldg.	run-off (Warsaw)	LID practices codified in ordinance	Town of Warsaw	(through FOR) will ask john tippet	2004
	Subdivisions		roads, septic,services		limited number currently, no problems			
	Waterfront		NPS from run-off, fert.		public education of waterfront landowners	Va Cooperative Extension	existing funds	Ongoing
Tourism		limited public water access pts.	little access	little access	focus recreation on USFWS refuge	USFWS Rapp. Wildlife Refuge	USFWS, DEQ Coastal Program, Volunteer	2010
		hunting	none identified					
		fishing	litter	litter	regional approach, public education, community service	Northen Neck PDC	existing funds	2005
		birdwatch	none identified					
		limited hiking opportunities	lack of trails	lack of trails	construct a hiking, biking, equestrian trail	NNPDC	ISTEA	2015
		campgrds.	none identified					
		historic res.	none identified					
		boating	streambank erosion	inc. boating, new bridge	public education	VMRC, Coast Guard Auxilliary, Marinas	Existing operating budgets, DCR mini-gran	Ongoing

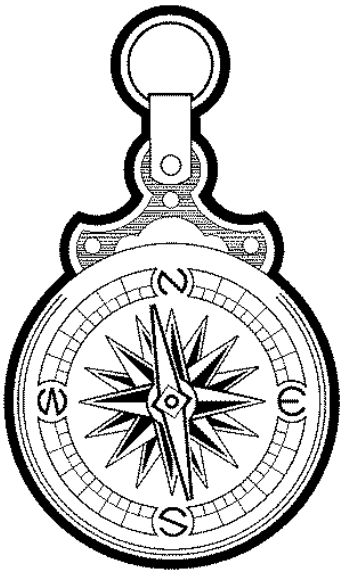
APPENDIX D

CAT POINT CREEK
LAND AND WATER NEWS

Volume 11 *Striving to Maintain Intrinsic Qualities* November 2002

New Beginnings

The Cat Point Creek Project recently turned another corner assuming a slightly new focus. While the mission remains the same, the administration will change and the project will focus on the establishment of a "Watershed Management Plan." The Cat Point Creek Citizen Committee will continue as the locally driven guiding body, although it will need to expand to accommodate additional members, reflecting the diverse interests of persons in the watershed.



The project had its origin in 1995 sponsored by the Tidewater Resource Conservation and Development in Tappahannock with a grant from EPA. A local guiding committee, the Cat Point Creek Steering Committee was formulated. They drafted a rudimentary plan for the conservation of Cat Point Creek, although agencies and funding sources were not identified. Their mission was "a voluntary group of concerned citizens sharing values which focus on the conservation of natural resources and the preservation of wildlife habitat and water quality, who are determined to protect these values." Due to the very rural nature of the watershed, early projects dealt with water quality as affected by non-point sources of pollutants from agricultural and forestal practices. Currently there is an ongoing project to investigate whether the numerous beaver dams block passage of migrating fish that could possibly spawn upstream. Now is time to further refine the initial watershed plan, to reflect all interests in the watershed.

What is a "Watershed Management Plan?" In a nutshell, a watershed management plan is a document drafted by all the stakeholders to map out THEIR future for THEIR watershed. There are many interests in Cat Point Creek. Those who hunt in the watershed want to maintain the bountiful game. Those who live in the watershed want to protect their interest in their land and maintain the beauty of their rural surroundings. The farmer wants to earn a living growing crops. The logger wants trees to harvest. The realtor wants to sell land. A watershed management plan is an agreement that takes all these interests into account, determines a course of action to achieve the agreed upon goals, and identifies agencies along with possible funding sources to make these goals a reality. Input from all persons with an interest in the watershed is solicited. The Chesapeake 2000 Agreement strives for two-thirds of the Bay watersheds to have locally driven watershed management plans in place by the year 2010.

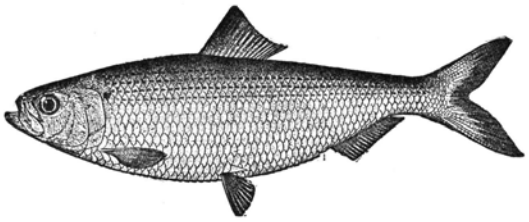
A new grant from the Virginia Department of Conservation and Recreation proposes to build the foundation for a comprehensive plan for the watershed. It will include an assessment of the current environmental conditions in Cat Point Creek, identify the

economic, political, and aesthetic forces at work there, and ultimately present the plan for acceptance by the governing bodies of Westmoreland and Richmond Counties. The Northern Neck Planning District Commission will administer the grant with components performed by the Northern Neck Soil and Water Conservation District and Tidewater Resource Conservation and Development. Other agencies with first hand involvement in the project include the Rappahannock River Valley National Wildlife Refuge and The Nature Conservancy. The grant project period begins December 1st, 2002 and ends November 30, 2003.

Anyone interested in assisting in the development of the watershed management plan is encouraged to contact Stuart McKenzie, of the Northern Neck Planning District Commission, at (804) 333-1900, or email smckenzie@nnpdc17.state.va.us.

The Beaver Connection

The last newsletter promised an update on the beaver dam project in Cat Point Creek. This phase of the project is not complete. The results, so far, are shy of those anticipated.



In response to a problem, the Cat Point Creek Citizen Committee teamed up with The Nature Conservancy, to determine what could be done to aid the herring in reaching spawning grounds upstream through many beaver dams blocking their passage. A complete inventory of the dams was made. During the spawning run, fish upstream were sampled enabling determination of the type of beaver dam that actually blocked migration. Dry weather, however, altered what was a good plan. The lack of water this summer changed everything.

In total, 34 beaver dams were identified between County Bridge and Chandlers Mill Pond – some very wide, some very high. Teams of volunteers charted each dam recording all critical characteristics, including the GPS location.

Fish were sampled by the Center for Environmental Studies at Virginia Commonwealth University biologists. Herring were documented only as far upstream as an extensive dam just above the confluence of Pantico Run affectionately dubbed “the mother dam.” It is inconclusive whether the dam would have blocked the migrating fish in a normal year with average stream flow. Interestingly, the biologists did identify the eastern silvery minnow, a fish often found in close association with the herring, upstream from the mother dam. This left suspicion that there may have been unsampled herring as well. Absolute conclusions were impossible due to the extraordinary dry conditions.

The list of fish collected on Cat Point Creek above County Bridge was very impressive due to the great variety. Those collected included:

NATIVE
Blueback herring
Alewife
Gizzard shad
Striped bass
Longnose gar
Bowfin
American eel
Chain pickerel
Redfin pickerel
Eastern mudminnow
Eastern silvery minnow
Golden shiner
Swallowtail shiner
Satinfin shiner
Creek chubsucker
Yellow bullhead
Brown bullhead
Tadpole madtom
Mirgined madtom
Yellow perch
Pirate perch
White perch
Eastern mosquitofish
Mud sunfish
Bluespotted sunfish
Redbreast sunfish
Pumpkinseed
Tessellated darter
Flier
Least brook lamprey

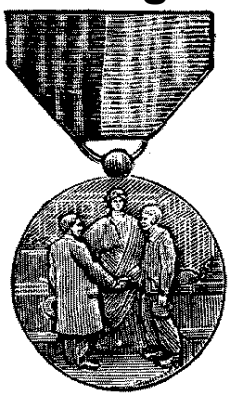
NON-NATIVE
Common carp
Largemouth bass
Warmouth
Bluegill
Redear sunfish
Blue catfish
Channel catfish

At the time of this newsletter, the same teams of volunteers are back in the field taking notes on the beaver dams. More specific information on the beavers and their dams will further the understanding of their impact on the spawning herring.

The next phase of the project will be to search for mechanical means to aid the fish in passing the dams that restrict their way. Several variations of portable devises may be tried. Again, fish sampling upstream will help determine their effectiveness.

The Cat Point Creek Citizen Committee meetings have provided a forum for review of the findings. In addition there have been programs related to fish, beavers, water quality and other environmental influences. The general public is welcome at the meetings. Additional information regarding the meetings is available from the Tidewater Resource Conservation and Development office (804-443-1118). Attendance may subject you to recruitment measuring beaver dams!

Award Winning Water Monitoring Team



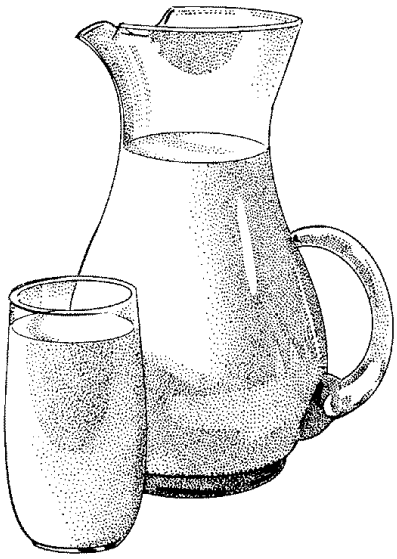
An award will be presented to the volunteers who monitor water quality in Cat Point Creek at the Annual Meeting of the Virginia Association of Soil and Water Conservation Districts, to be held in Roanoke on December 8-10. The award will be presented by the Earth Team, the corps of volunteers who serve the Natural Resource Conservation Service, in recognition of their dedicated service.

Those volunteers to be recognized include Carolyn Balderson, Edith Dunn, Tiffany Patrick, Rob Franklin, and Rachael Sullivan all of whom live in the Warsaw area. Most of them have served as water monitors since February of 2001.

Cat Point Creek is monitored at four sites: Peach Grove near Montross, County Bridge, Newland Road Bridge, and Naylors Beach. Each volunteer gathers a sample two times each month to enable them to record water temperature, pH, dissolved oxygen, salinity, and turbidity. In addition, notes are kept to document the environmental conditions at the time of the sample. The purpose of the monitoring is to record those qualities important in the sustenance of plant and animal life. This information enables scientists to understand the dynamics of the stream. All of the information is reported to The Alliance for the Chesapeake Bay who maintains a data repository for public access. Web access to the data is available at www.acb-online.org/citmon.cfm.

The funding for this effort is provided by the Department of Environmental Quality. Clean water is vital to the welfare of all life. It warrants our utmost attention and constant vigilance. If you would like to help with the monitoring, you too may help. Simply leave your name with the Tidewater RC&D at 804-443-1118.

WATER FACTS – Did you know?



- Raindrops are not tear-shaped. Scientists, using high-speed cameras, have discovered that raindrops resemble the shape of a small hamburger bun.
- About 70% of the human body is water.
- Life on earth probably originated in water.
- More than half of the world's animal and plant species live in the water.
- Almost 75% of the earth is covered in water.
- The human body needs 2 liters of water a day in our climate; we can last only a few days without water.
- Most of our food is water: tomatoes (95%), spinach (91%), milk (90%), apples (85%), potatoes (80%), beef (61%), and hot dogs (56%).

^^^ Tidewater RC&D is an equal opportunity provider ^^^
The Virginia Department of Conservation and Recreation funded this newsletter

Cat Point Creek Project
Tidewater RC&D
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Tappahannock, VA 22560

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CAT POINT CREEK
LAND AND WATER NEWS

Volume 12 *Striving to Maintain Intrinsic Qualities* May 2003

Fish Ladder

By Andy Lacatell
The Nature Conservancy

The phrase “Lord willing and the creek don’t rise” may have more meaning than ever this spring in Cat Point Creek. Last year, the creek suffered from low flows. This year we seem to have too much water. If all goes well, and water levels return to “normal”, bluebacks and alewife will find their journey upstream a little longer this year. The Cat Point Creek Steering Committee (sponsored by the Tidewater RC&D), The Nature Conservancy and Virginia Commonwealth University will be testing a new temporary fish passage structure at one of the larger beaver dams on Cat Point Creek.

The passage is a modified version of an Alaskan steeppass device, traditionally used to help pass salmon on larger systems. VCU has modified and built with Richmond Steel a reduced version of the traditional design. The project team hopes that a smaller temporary structure will not only help fish get upstream, but will demonstrate a sensitivity to the beavers in the area and will maintain the pools that duck hunters appreciate. In a sense, the fish passage is a bridge between the ecological needs of the herring, the traditional uses of the private landowners in the watershed, and a practical management solution for the beaver problem.

VCU will conduct surveys and assessment after the passage is installed to see if herring utilize the structure. If it works, Cat Point Creek will have developed a model for small watersheds to manage for beavers and fish while protecting the hunting and fishing habitat used by local citizens.

+++

Beaver Patrol

Cat Point Creek has been selected by the Chesapeake Rivers Program of the Nature Conservancy as a focal point for their program for good reason. It is a haven for widely diverse populations of plants and animals. This fact serves to remind us of what we already know - it is a special place. It is a place deserving of special attention to conserve what is there.

Fish are one of the animals worthy of our attention. Thirty-seven species were identified last year by biologists from the Center for Environmental Studies at Virginia Commonwealth University. Of special interest are the herring and their close cousins the shad. Although hickory shad were not sampled last year they are know to be resident. American shad are less frequent visitors. The herring, however, including the alewife and the blueback herring make up the large migration witnessed each spring. The creek provides the spawning environment they prefer. At this time the "run" is in full swing.

While it appears from the many herring present in the County Bridge area, that the herring are plentiful, the opposite is true. Populations are at the low end of their recorded history. These "anadromous" fish live in the ocean and return to their home fresh water stream to spawn. Offshore fishing pressure, predators (such as the blue catfish) and spawning obstacles have all contributed to this current condition. Spawning obstacles limit the area in which the fish can lay their eggs and may include culverts (herring prefer smaller streams) and dams. Beaver dams are believed to be obstacles but little is known about the degree.

Volunteers from the Cat Point Creek Steering Committee routinely visit the part of Cat Point Creek above County Bridge to document the presence, size and activity of the beaver dams there. You are invited to see the Tidewater RC&D photo display of the "beaver patrols" at the Rappahannock River Valley National Wildlife Refuge event deemed "The Blue Goose Bash" on May 17th. The event will be at the Hutchinson tract, a part of the Refuge 1.5 miles north of Tappahannock on Route 17.

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WANTED

Additional volunteers are needed to help collect water quality data in Cat Point Creek. As you know, all life depends on water - good water. It is important that the quality of our water is known and you can help. No prior experience is necessary and a training opportunity has been planned for this spring. Equipment will be provided. Call Hugh Markham at the Tidewater RC&D to register your interest at 804-443-1118.

+++

$ Taxes $

save save save save save save save

A frequently overlooked tax advantage property owners can exercise is one for land use. Both Westmoreland and Richmond Counties have adapted tax leniency for select conservation practices. You may qualify should you have a perpetual conservation easement or be in an agricultural/forestal district. Visit with the personnel in the Commissioner of Revenue's office in either county to find out how to qualify. Even more information is referenced in a brochure available from the Department of Game and Inland Fisheries entitled "Tax Facts."

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Partners for Fish and Wildlife, a national program implemented by the US Fish and Wildlife Service to protect, enhance and restore important fish and wildlife habitats on private lands through partnerships, offers a chance to regain some of Americas important natural resources. This voluntary cost-share program is built on the strength and interest of committed individuals and organizations to accomplish shared conservation goals.

The Program works in voluntary partnership with private landowners to restore wetlands, streams and river corridors, prairie, grasslands and other important fish and wildlife habitats for the mutual benefit of Federal trust species and the interests of the landowners involved. Usually, a 90% cost share is achieved by working with landowners and a host of nationally based and local entities, State, and local agencies soil and water conservation districts, and private conservation agencies. Landowners sign an agreement to retain the restoration projects for the life of the agreement, usually ten years, and otherwise retain full control of their land. Examples of restoration projects include plugging ditches in drained wetlands to reflood, fencing livestock out of streams to allow revegetation, removing dikes or other obstructions that block natural tidal flow, and redesigning culverts to improve tidal exchange between adjacent wetlands. The goal of each project is to maximize biological diversity and restore the natural resource functions and values that existed on the site, and in the ecosystem at large, prior to human alterations.

You can become involved by contacting the Service=s Partners for Fish and Wildlife biologists. If a project appears feasible, and fits within the program=s priorities, the biologist will schedule a visit to your property. Any non-Federal agency, organization, or individual can submit a proposal for habitat restoration to the state Coordinator. There is no standard application form, however a written work plan and budget will be required. The project will be done as soon as possible based on site selection priorities, available funds and site conditions. Your project may be done that field season or you may be added to a list of waiting landowners.

For More Information Contact: Jennifer Nelson
Virginia Field Office
U.S. Fish and Wildlife Service
Gloucester, VA 23061
804-693-6694 ext. 111
jennifer_nelson@fws.gov

Jennifer has been working with the Tidewater Resource Conservation and Development to identify landowners in the Cat Point Creek area interested in wildlife projects. The Tidewater RC&D sponsors the Cat Point Creek Steering Committee through the Cat Point Creek Project.

ANNOUNCEMENT

Cat Point Creek Watershed Planning Meeting

7:00 PM
Wednesday, May 21st
Museum Auditorium

A.T. Johnson Human Services Bldg.
Montross

As a resident of the Cat Point Creek watershed, you are invited to attend this meeting, hosted by the Northern Neck PDC, the Northern Neck Soil and Water Conservation District and the Tidewater Resource Conservation and Development Council. Be a part of the planning - bring your concerns to this important planning meeting.

This document was funded by the Environmental Protection Agency's Chesapeake Bay Program through the Virginia Department of Conservation and Recreation, via grant agreement number BAY-2002-22-SR

Chesapeake Bay Program
A Watershed Partnership

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Cat Point Creek Project
Tidewater RC&D
772 Richmond Beach Rd.
Tappahannock, VA 22560

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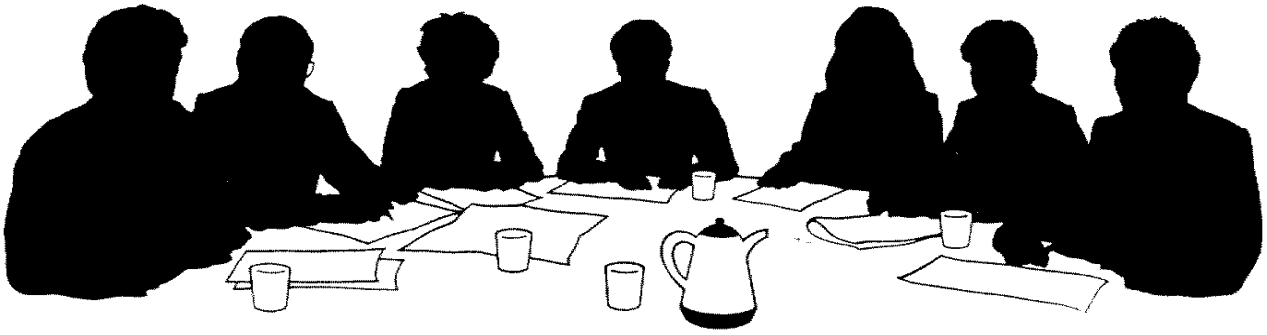
CAT POINT CREEK
LAND AND WATER NEWS

Volume 13 *Striving to Maintain Intrinsic Qualities* January 2004

Cat Point Creek Planning



When a course of action is desired, there is nothing more important than a good game plan. When the plan involves many people, their support is imperative and may take more time to develop. The residents of Cat Point Creek are currently in the midst of planning - the huddle before the play. With so many players it becomes tedious, challenging to watch, but certainly important to the play.

If you receive this newsletter, you are a resident of Cat Point Creek. As such, you have been invited to participate in a series of meetings to set forth concerns for the watershed and make suggestions where manageable change is possible. Two meetings were held in Warsaw and one in Montross. While the word "confusion" has been used to describe the meeting, it is a necessary part of the process. As the meeting participants "hashed things over" it became clearer to all what is valued the most. These values will become an integral part of the plan since they set forth protection priorities for the governing bodies. While many participants are eager for action, well thought out action will serve best.

A fourth meeting is planned for Wednesday, January 21st at the Warsaw Town Hall at 7 PM. Now it is time to consider actions that will serve to protect the identified values. Your participation is still important to the process. When complete, the plan will be presented to local governments with the anticipation of adoption. The project is sponsored by the Northern Neck Planning District Commission, the Northern Neck Soil and Water Conservation District and the Tidewater Resource Conservation and Development Council.

Dissolved Oxygen

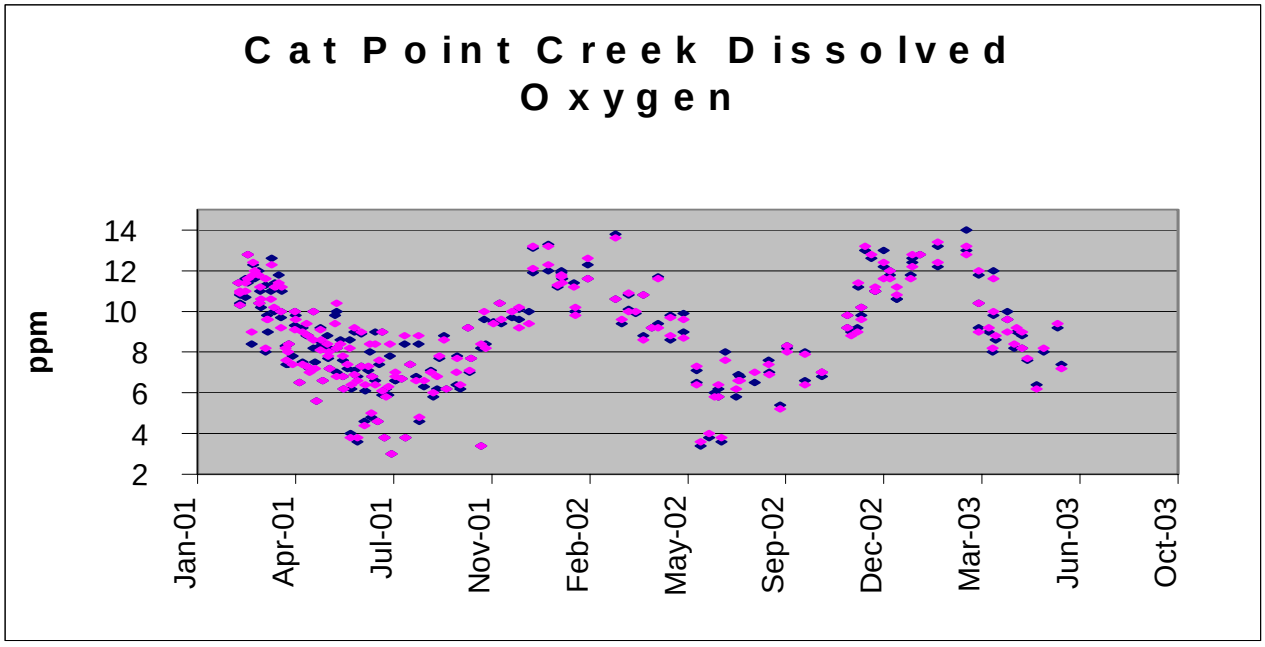
One of the most important indicators of habitat quality for most aquatic life is dissolved oxygen. Let's face it, most life depends on an abundance of oxygen, be it plant or animal. They simply can't live without it since their basic metabolic processes depend on it! Dissolved oxygen, or the oxygen that is held in the water itself, is one of the important parameters measured by the volunteers who monitor water in Cat Point Creek.

After monitoring the water in Cat Point Creek for several years it is interesting to stand back to see what we might learn. Each time a water sample is taken, dissolved oxygen is measured two times to assure that the reading is not in error. All of the data is saved and over time a lot of data is accumulated. But what does it all mean?

Warm water cannot hold as much oxygen as cold water. Regardless of the temperature, when water has all it can hold it is said to be 100% saturated. Dissolved oxygen is measured in parts per million or ppm. At its best, water can hold no more than about 14.6 ppm of oxygen. At 86 degrees it can hold only about 7.7 ppm. Most fish and marine organisms become stressed and cannot live below 3 - 5 ppm. The accompanying graph shows the annual cycle of high and low oxygen levels. **There are times when oxygen becomes dangerously low in Cat Point Creek, although it happens infrequently and in the summer months.** Most of the time the dissolved oxygen levels are quite sufficient and are likely an important part of the reason for the great diversity of fish life in the creek.

So how do we maintain adequate dissolved oxygen? A number of factors contribute to the levels. Oxygen is released into the water by aquatic plants through photosynthesis. It also enters through turbulence and diffusion at the water surface. Therefore, it is important to encourage aquatic plants, encourage shade trees along the edges of the creek to maintain shade, and minimize the decay of plant material (it eats up the oxygen).

Cat Point Creek's water is currently monitored at four bridge crossings along the creek. The furthest upstream is the Peach Grove Bridge near Montross, next is County Bridge , then Newland Road Bridge and finally near the Rappahannock River at the Naylors Beach Bridge .



Hydrolab

Truly a collaborative effort, the recent acquisition of a state-of-the-art water monitoring system is the pride of those now monitoring water in Cat Point Creek. The Hydrolab was selected by the Cat Point Creek Steering Committee. Joe McCauley, with the Rappahannock River Valley National Wildlife Refuge identified a source of funding and wrote a grant proposal to the U. S. Fish and Wildlife affiliate called RAMSAR, to secure the funds. Having ample field monitoring experience, Rob Wittman with the Virginia Department of Shellfish Sanitation, selected the appropriate model and accessories. Andy Lacatell, with the Chesapeake Rivers Program of The Nature Conservancy in Tappahannock, placed the order employing their purchasing advantage. Bill Shanabroch, with the Piedmont Regional Headquarters of the Virginia Department of Environmental Quality, worked with key volunteers in establishing a protocol and training them in usage.

The Hydrolab has gained wide recognition for its simplicity in use and its tolerance of field conditions. While it is considered a scientific instrument, it will withstand some abuse and adverse weather conditions. It is capable of measuring water temperature, sample depth, dissolved oxygen, pH, conductivity (from which salinity can be determined), and turbidity and saving numerous data sets for subsequent recording back in the laboratory.

In operation, the calibration of the unit both prior to as well as after a field trip is highly important. All of the data collected in Cat Point Creek is destined to become a part of a permanent data set maintained by the Department of Environmental Quality. Precise methodology must be followed to assure the quality of the data collected. It is imperative that volunteers who use the unit are familiar with the importance of the precise procedure and follow through accordingly.

Additional help in monitoring water is always welcome and those desiring to help may register their interest with the Tidewater RC&D at 804-443-1118.

Think Spring

ANNOUNCEMENT

Cat Point Creek Watershed Planning Meeting

7:00 PM
Wednesday, January 21st

Warsaw Town Hall

As a resident of the Cat Point Creek watershed, you are invited to attend this meeting, hosted by the Northern Neck PDC, the Northern Neck Soil and Water Conservation District and the Tidewater Resource Conservation and Development Council. Be a part of the planning - incorporate your concerns in a permanent plan.

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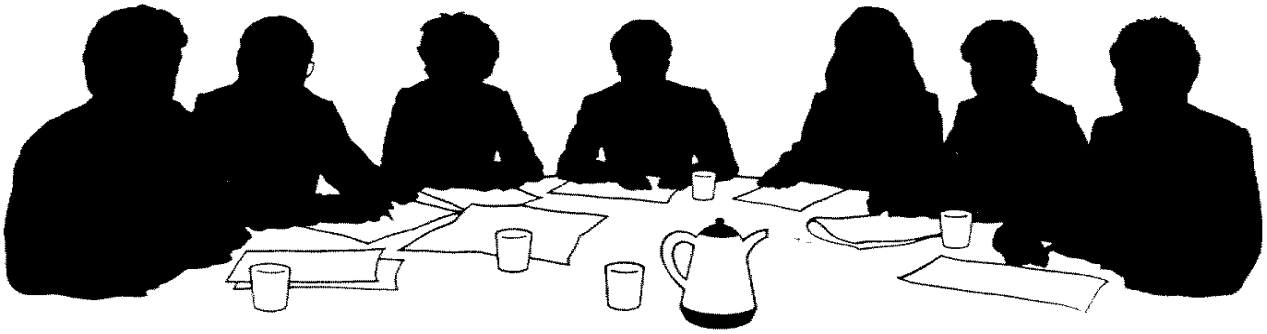
CAT POINT CREEK
LAND AND WATER NEWS

Volume 14 *Striving to Maintain Intrinsic Qualities* March 2004

Cat Point Creek Management Plan Draft Seeking Comment



The public meeting phase, working to develop a management plan for the Cat Point Creek Watershed, has concluded with many issues brought forward and discussed. The planning team from the Northern Neck Soil and Water Conservation District, the Northern Neck Planning District Commission and the Tidewater Resource Conservation Development Council has done its best to capture the issues and record the solutions discussed in the meetings. Now it is time to report back to you what was discussed – the threats, the issues and the solutions in this special edition of the newsletter. A draft of the final report, complete with documentary attachments, will be available for comment at the Rappahannock Community Library in Warsaw between March 15th and March 31st. It is important that the report reflects the committee's concerns and best expresses their desires for the future of the watershed. Please take the time to read it and forward your comment.

This newsletter is the outline of what will be contained in the final watershed management plan. The subjects have been divided into three broad parts – **GEOGRAPHY**, **HABITAT**, and **LAND USE POLICY**. Each part itemizes "THREATS" (e.g. Erosion…), "Issues" specific to Cat Point Creek (e.g. Potential mismanagement…), and "*Solution*s" (e.g. Support…) for each issue.

GEOGRAPHY

The Cat Point Creek Watershed is located in an area having steep topography with low organic and highly erodible soils. Proper management is critical to minimize sedimentation and maintain water quality.

THREAT - EROSION DUE TO STEEP SLOPES & HIGHLY ERODIBLE SOILS

Issue – Potential mismanagement of sensitive landscape

- *Support state and federal programs for cost share to install best management practices on agriculture and forestal lands through the Northern Neck Soil and Water Conservation District*
- *Support regional inspection and enforcement of state and regional erosion and sedimentation control regulations and practices through the counties and the Northern Neck Planning District Commission*

THREAT - WATER QUALITY (SURFACE)

Issue - Low pH impairment for 3.1 mi. segment from Ruin Branch to Belfield Creek as identified by Virginia Department of Environmental Quality

- *Monitor tributaries to verify natural causes of impairment to be performed by Chesapeake Bay Governor's School and Virginia Department of Environmental Quality*

Issue – Water quality (surface)

- *Support county ordinances to monitor biosolids application*

Issue - Water supply (surface)

- *Recognize potential for two reservoirs in Cat Point Creek tributaries as cited in the Richmond County comprehensive plan*

THREAT - WATER QUALITY (GROUND WATER)

Issue - Unknown quality and quantity

- *Support efforts to collect additional ground water data from US Geological Survey*
- *Support ongoing efforts by Northern Neck Planning District Commission seeking to understand our current resources*

HABITAT

The diversity of habitat in Cat Point Creek has been illustrated through wildlife research conducted by the US Fish and Wildlife Service, the Nature Conservancy and the Virginia Commonwealth University. The Nature Conservancy has identified Cat Point Creek as an aquatic portfolio and one of only a few "last great places" in the Coastal Plain of Virginia. The upper reaches contain numerous tributaries protected by swamps and forested buffers.

THREAT - AQUATIC (WETLANDS)

Issue – Potential point source pollution

- *Recognize Montross Waste Water Treatment facility as the only registered point source*
- *Discourage additional point sources*

Issue – Potential for non-point source pollution

- *Support state and federal programs for cost share to install best management practices in uplands*

Issue - Sedimentation

- *Support state and federal programs for cost share to install best management practices on agriculture and forestal lands through the Northern Neck Soil and Water Conservation District*
- *Support state and federal programs that support riparian forests through the Northern Neck Soil and Water Conservation District and the Chesapeake Bay Local Assistance Department*

Issue – Invasive species phragmites

- *Support the Rappahannock Phragmites Action Committee program which has identified and implemented a control program where known stands exist in the lower Rappahannock Watershed area*
- *Report newly identified occurrences of phragmites to the Rappahannock Phragmites Action Committee*

THREAT - STREAM

Issue – Potential for point source pollution

- *Same as for Aquatic (wetlands) areas*

Issue – Potential for non-point source pollution

- *Same as for Aquatic (wetlands) areas*

Issue – Potential for sedimentation

- *Same as for Aquatic (wetlands) areas*

Issue – Potential for degradation of headwaters region

- *Encourage the development of county policy to protect the headwater regions feeding Cat Point Creek*

Issue – Invasive species blue catfish and impact on herring populations

- *Cat Point Creek Steering Committee will promote an educational tool, such as a catfish derby, to further knowledge of invasive species*

Issue – Inability for herring species to access upper reaches to spawn

- *The Cat Point Creek Steering Committee will continue working with The Nature Conservancy to monitor and increase passage for spawning herring*

THREAT – FORESTS

Issue – Potential for loss of and fragmentation of forest cover

- *Encourage state and local policies that promote the interest forest owners – those instrumental in conserving the quality of the watershed. Westmoreland County, the Northern Neck Planning District Commission and the Tidewater Resource Conservation and Development Council are each working on conservation projects*
- *Support "Hunt Clubs" and recognize the contribution they have made in conserving the quality of the watershed*

Issue – Potential for monocultures

- *Encourage programs that promote diverse tree populations to support a wider range of wildlife through the Northern Neck Soil and Water Conservation District*

Issue – Potential for improper forest harvest

- *Support the Virginia Department of Forestry to implement forest best management practices*

LAND USE POLICY

Historically the economic base and the resultant lifestyle for the Cat Point Creek watershed area have been based on agricultural and forestal activity. Recreation has centered on the outdoor resources. The towns of Montross, Warsaw and other prime growth areas provide commercial support and county regulation has evolved around the agricultural and forestal activities. County land use policy has determined growth patterns.

THREAT – LOSS OF RURAL LIFESTYLE

Issue – Loss of rural lifestyle and economy

- *Promote state and local policy encouraging healthy economies in rural endeavors – the Northern Neck Planning District Commission is working with other rural areas to leverage political and economic strength*
- *Promote the importance of rural economies through education of those who move here from urban areas – programs sponsored by the Northern Neck Soil and Water Conservation District, the Virginia Cooperative Extension Service and county land use offices*

Issue – Loss of and fragmentation of farmland

- *Encourage state and local policies to promote the interest of farmers and foresters – those instrumental in conserving the quality of the watershed. Study is underway by Westmoreland County, the Northern Neck Planning District Commission and the Tidewater Resource Conservation and Development Council*

THREAT – URBAN GROWTH

Issue – Increased development pressure

- *Due to the lack of consensus regarding the degree of the threat, the matter was tabled*

Issue – Storm water runoff

- *Encourage low impact development principles in Montross, Newland and other growth points following the lead of the Town of Warsaw*

Issue – Establishment of natural corridor

- *Encourage Westmoreland County to recognize the importance of Cat Point Creek in their comprehensive plan*
- *Support efforts for Richmond County to strengthen language describing their natural corridor and extend the corridor to the Westmoreland border in their comprehensive plan*
- *Encourage voluntary participation in programs benefiting wildlife along natural corridors*
- *Encourage conservation easements to enhance wildlife habitat and promote open space*

THREAT – GROWING DEMAND FOR TOURISM

Issue – Limited opportunities for recreation and litter at key points

- *Designate the Rappahannock River Valley National Wildlife Refuge as the focus for those seeking outdoor experience*
- *Investigate opportunity to leave the old Newland Road bridge for recreational purposes when replacement is constructed*
- *Participate with The Naylor's Beach Association for organized cleanup in their area*
- *Promote programs such as Virginia Department of Conservation and Recreation's "Adopt-A-Spot"*

T H A N K Y O U !

Your input in developing the watershed management plan for Cat Point Creek has been appreciated. The watershed management planning team of Theresa Tabulenas of the Northern Neck Soil and Water Conservation District, Stuart McKenzie of the Northern Neck Planning District Commission and Hugh Markham of the Tidewater Resource Conservation and Development Council wishes to thank you. Be sure to review and comment on the report available in the Rappahannock Community College library from March 15th to 31st.

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